SUPPORT DOCUMENT

for the Air Operating Permit issued to

Kimberly-Clark World Wide, Inc.
(KCWW)
2600 Federal Ave.
Everett, Washington

State of Washington
DEPARTMENT OF ECOLOGY
300 Desmond Drive
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INTRODUCTION

This Operating Permit Support Document fulfills the operating permit rule "Statement of Basis" requirement and explains particular portions of the air operating permit for Kimberly-Clark World Wide, Inc. (KCWW). This document is not part of the operating permit for KCWW. Nothing in this document is enforceable against the permittee, unless otherwise made enforceable by permit or order.

STATEMENT OF BASIS

When the Department of Ecology issues a draft operating permit, it is required to provide a statement that sets forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions, [WAC 173-401-700(8)].

MILL PROCESSES

Mill Description

The KCWW mill in Everett, Washington, is an integrated pulp and paper manufacturing facility, SIC codes 2611 and 2621. The site produces a wide range of tissue products including paper towels, toilet paper, napkins, and wipers. The facility operates continuously 24 hours per day, 7 days a week.

The pulp mill produces bleached sulfite pulp. Most of this pulp is used by the paper mill along with purchased kraft, eucalyptus, semi-mechanical pulps, and recycled fiber to manufacture tissue products for both commercial and consumer markets.

A site plan of the mill layout is provided as Figure 2-1, and a mill process diagram is attached as Figure 2-2. To describe the process in general terms, wood chips are cooked with acid in digesters to make a pulp slurry. This slurry is then separated into pulp and liquor fractions. The liquor is concentrated and burned as fuel in the plant's recovery boiler (No. 10 boiler). The wood fiber, or pulp, is bleached. The bleached pulp is either used immediately in the paper mill, or is dried, pressed, and baled for storage. The mill's unit processes are described further below.

Pulping Process

Wood chips from whole logs and sawmill residuals arrive at the plant by truck and barge and are stockpiled onsite in chip piles and silos. The chips are screened and conveyed by a covered belt system to a batch digestion process to make pulp. Digestion occurs in an ammonium-based sulfite process that cooks the chips in large-batch digesters using heat and chemicals. The cooking process separates the wood into its primary fractions: wood fibers and lignins. Lignins are the binding material that holds the fibers together.

After cooking, the material is washed to remove the cooking liquor, spent sulfite liquor (SSL) and organic solids from the pulp. The SSL is concentrated in external film, multiple-effect evaporators to form a liquor of approximately 50 percent solids

concentration. This concentrated liquor is then sprayed into the plant's recovery boiler where the organic content in the liquor is burned, producing steam to operate the digesters and evaporators. The fiber pulp product is sent through screens and washers before going to the bleaching process.

The chemicals used in the cooking acid are ammonium bisulfite and sulfurous acid. Raw materials used to create the cooking acid are anhydrous ammonia, molten sulfur, and water. The sulfur is burned to form sulfur dioxide which is dissolved in cold water with ammonia to form ammonium bisulfite. Each process unit is hooded and vented to the acid plant absorption tower, which collects and recovers sulfur dioxide. The sulfur dioxide recovered from the flue gas is converted to ammonium bisulfite for use in the digestion process.

Wastewater from the pulp mill is discharged to either an onsite primary treatment process for removal of solids or an onsite secondary treatment process for biological treatment to remove biochemical oxgen demanding chemicals (BOD) before being discharged. The treatment process used depends on the source of the wastewater and its constituents. The secondary treatment system also receives a portion of the primary effluent.

Pulp Bleaching Process

The fiber (unbleached pulp), is sent to the bleach plant where chemicals are used to remove residual lignin and brighten the pulp. The bleaching process was converted in October of 2000 from a process utilizing chlorine gas and hypochlorite to one utilizing chlorine dioxide. The current three stage process is DEopD (chlorine dioxide, caustic extraction with oxygen and peroxide, and then chlorine dioxide again). After each of the three bleaching stages, the mixture is washed. Wastewater from the bleach plant is sent to the secondary wastewater treatment system.

The chlorine dioxide is made onsite in a generator. Residual gasses from the generator and from the bleach plant washers are directed to a scrubbing tower where a solution of sodium hydrosulfide is employed to remove any residual chlorine dioxide.

Screening, Drying, and Baling Processes

The bleached pulp is screened and centrifuged to remove dirt and contaminants from the finished pulp. Rejected material is sent to primary treatment. At this point, the cleaned pulp may be pumped to and used immediately in the paper mill, or it may be dried on the pulp drying machines and stored for later use and/or sale. When needed on site, the dried pulp is rewetted in a pulper to again form slush pulp for the paper mill. Purchased dried pulp is also used daily as part of paper mill recipes.

Paper Mill Processes

The paper mill receives pulp from the sulfite process as well as blends of secondary fiber and purchased pulp. Water is added to the pulp to make a one-half of one percent mixture. Wet and dry strengthening agents and optional dyes may be added. On machines 1, 2, 3, and 5, the fiber-water mixture is conveyed to a Fourdrinier wire

followed by a felt press and is then dried and "creped" on Yankee dryers. On the rebuilt machine #3 two inline gas burners were installed with cascading heat from No. 1 tissue machine into the wet end of No. 3 tissue machine. The exhaust is cascaded from the wet end of No. 3 tissue machine to the dry end of the machine. Paper machine #4 uses through drying. For some products, optional after-dryers may be used after the Yankee dryers. For paper towels and toilet paper, the dried material is rolled. As part of finishing, dyes, and design imprints as well as final embossing and texturing may be added. The product is rewound on rolls and perforation tears are added. A rotating blade then cuts the long roll into smaller ones. For napkins and wipers, the product is cut and folded in the finishing process. The product is wrapped and conveyed to a distribution building for transport.

Paper machine and finishing waste is called broke and is recycled to the mill. Wet and dry broke from the paper machines and finishing areas are placed in a beater. The broke is treated with hypochlorite to bleach the dyes and to aid defibering by breaking down chemicals in the paper. Hypochlorite is consumed by the reactions with the fiber, dyes, and additives. Excess chlorine is neutralized with sodium bisulfite. The slushed broke is pumped to a broke storage chest and reused in the process.

Utilities Processes

In 1995, five old Dutch oven wood waste (“hog fuel”) boilers were replaced by a new boiler (No. 14 boiler) which is owned by the Snohomish County Public Utility District. The boiler cogenerates some 277,000 megawatt-hours per year of electricity for that utility while producing up to 435,000 pounds of steam per hour for the mill. The wood-waste boiler can burn approximately 2,000 wet tons of fuel per day. The fuel is provided by local sawmills and wood products companies and consists of sawdust, bark, and other wood waste. In addition, KCWW burns approximately 12,000 dry tons of dewatered sludge per year which originates at the on-site primary and secondary wastewater clarifiers. This sludge contains about 60 percent waste-wood fiber resulting from the pulping process. Minor amounts of other fuels are burned including waste paper products from onsite operations. Due to a recent change in regulations, the boiler is also permitted to burn used railroad ties containing creosote. Emissions from the No. 14 boiler are vented to a baghouse to remove the particulate material generated before being exhausted to the outside air.

The recovery boiler (No. 10 boiler) burns spent sulfite liquor, which is liquor that has been concentrated after the digestion process. Sulfur from the cooking mixture that is bound up in the spent sulfite liquor is liberated during combustion and converted to sulfur dioxide. An ammonia absorption tower captures the sulfur dioxide, which is reused. Brinks-type mist eliminators remove mist droplets and particulate emissions. A Dynawave reverse jet caustic scrubber located after the absorption tower before the demisters also removes some particulate as well as residual sulfur dioxide. The recovery boiler is capable of producing 380,000 pounds of steam per hour. Boiler No. 10 also burns gas as necessary.

Boilers 7, 8, and 9 are power boilers which normally only operate when the larger boilers are off line for maintenance; they usually burn natural gas, although boilers 8 and 9 can also burn diesel.

Wastewater Treatment Process

The mill's wastewater is treated either in primary clarifiers with pH adjustment and solids removal, or by biological secondary treatment to reduce biochemical oxygen demand and total suspended solids. During secondary treatment, ammonia may be added as a nutrient for the microorganisms. The type of treatment depends on the source of the wastewater. Most of the wastewater from the paper mill and some of the wastewater from the pulp mill, the boilers, and stormwater systems goes to the primary clarifiers. The secondary treatment system primarily receives wastewater from the bleach plant, some pulp mill streams (e.g., pulp screen room), the recovery system (condensates), and some paper mill effluents. Operators have the flexibility to send some of the wastewater generation streams to either or both systems in various splits, depending on what the treatment needs are and the current operational status of the wastewater treatment system. Some primary effluent can also be routed to the secondary treatment system for additional treatment. Treatment plant solids are dewatered and burned in the No. 14 boiler. The secondary treatment system is the sink for methanol generated in the pulping process.

ASSURING COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS

An operating permit must contain terms and conditions that assure compliance with all applicable requirements at the time of permit issuance [WAC 173-401-600(1)]. The Department of Ecology has determined that the requirements listed in Appendix A to the permit do not apply to the facility, as of the date the permit is issued, for the reasons specified. [WAC 173-401-640(2)]. Not all of the inapplicable requirements are listed in Appendix A. Requirements that were considered obviously inapplicable were excluded from the list of inapplicable requirements. Appendix C of the permit contains the abbreviations used in the permit. The state Regulatory Orders that impose limitations and requirements on the permittee are listed in Appendix B of the permit. These limitations and requirements are on going.

Compliance with the conditions in the permit is deemed to constitute compliance with applicable requirements as contained in the permit on which the terms and/or conditions are based, as of the date that the permit is issued. [WAC 173-401-640(1).

ALTERNATE OPERATING SCENARIO

The permittee did not request any other alternate operating scenario; and therefore, WAC 173-401-650 becomes an inapplicable requirement.

APPLICATION

Ecology received an application on December 30, 2004. The permit renewal application was determined to be complete on February 10, 2005.

DESCRIPTIONS AND COMMENTS ON SPECIFIC PERMIT CONDITIONS

Cogeneration Boiler (No. 14)

The No. 14 wood waste boiler was constructed in 1995 in conjunction with the Snohomish County Public Utility District, and replaced five Dutch oven hog fuel boilers constructed in the 1930's. No. 14 wood waste boiler consumed 510,679 wet tons of wood waste in 2002 and 526,224 tons in 2003. The boiler was financed by the PUD, which contractually owns the boiler and the electricity generated, while KCWW operates the boiler and extracts steam for various processes. Upon construction of the boiler, the existing fabric filter emission control system (installed in 1979) was upgraded to include additional bags. The bag filtering material was updated to one having improved filtration efficiency.

Boiler No. 14 has a single emission point, the wood-waste boiler exhaust stack utilized the original boilers stack. The stack was refurbished in 2004 which reduced the inside diameter. The new stack diameter is 12 feet 5 inches, while the stack height is 172 feet above ground level. The Ecology emission point number is 23.

Fuel to the No. 14 boiler is primarily clean wood waste, land clearing debris, in-mill waste wood and rejected paper, used creosote treated railroad ties, and wastewater treatment plant sludge. Additionally, up to 12 tons per day of non-wood fuel and solid waste may be used, under the terms of the No. 14 Boiler Fuel Plan submitted to Ecology June 29, 1994 (supplemented and revised July 27, 1994). The primary backup fuel for this boiler is natural gas. The secondary backup fuel is No. 2 distillate with sulfur content not to exceed 0.05 percent by weight.

Steam is produced for electrical power production and internal mill uses. The distribution between users and actual usage rates for produced steam can vary, depending on power grid and mill operational demands. During maintenance or emergency situations, or when the boiler is firing only fossil fuel, the baghouse may be bypassed. This is standard practice during both startup, when the boiler is warming up, and shutdown, when the boiler is cooling. Bypassing is necessary because low temperatures will cause condensation in the bags and lead to plugging and deterioration. While not common, visible emissions may exceed 10 percent during startup and shutdown periods.

Kimberly-Clark is also required by its insurers to perform annual flame safety tests on the No. 14 boiler. All fossil fuels, natural gas and No. 2 distillate, able to be burned in the boiler have to be tested for flame safety. Flame safety checks are performed to verify that

the boiler controls and systems work properly to protect against the hazard of a furnace explosion from a collection of unburned fuel in the boiler which in turn reduces the risk of personal injury, equipment damage, and plant downtime. During the firing test, the atomizing steam is throttled to disrupt the air/fuel ratio and when the atomizing steam drops to a specific pressure the boiler must automatically trip for a successful test. During this test the stack flue gas becomes very dark and heavy due to the upset air/fuel ratio. The dark emissions are present for approximately 15 minutes (the duration of the test), but visible emissions will exceed 10 percent during this period. The flame test has been approved with the condition that the company gives Ecology advance notice that they will be performing the test.

The boiler was originally permitted by a Notice of Construction approval and Regulatory Order No. DE 93-AQI064 dated July 1, 1993. The boiler was subsequently repermitted, and this order was replaced by Order No. DE 98-AQI028 on July 15, 1998. Order No. DE 98-AQI028 is still current as the principal document regulating the boiler operations and emissions, but a more recent Order No. DE 04AQIS-5956 was issued February 20, 2004 following a revision to the state incinerator rule, WAC 173-434. This limited Order was published primarily to authorize the burning of wood treated with creosote in the boiler. It also grants permission for the destruction of controlled substances by law enforcement agencies, the burning of outdated postage stamps, and the use of oil contaminated paper generated on site for fuel.

Several federal statutes also apply but these are considerably less stringent than the limits in Order DE 98-AQI028.

CAM Applicability – The only parameters that require a Compliance Assurance Monitoring plan for the No. 14 boiler are PM and PM10. Evaluation of the condition of baghouse's modules and noting the functionality of bags including any bag failures weekly followed by repair of the bags that fails within 72 hours meets the requirement for CAM. NO_x, CO, and SO_2 are continuously monitored and therefore CAM is not required. There are no controls for VOC and therefore CAM is not required.

Recordkeeping and monitoring requirements are as required by Regulatory Orders No. DE 98-AQI028 and DE 04AQIS-5956 and are placed in the permit as well as the other requirements required by state regulations. Additional requirements will apply on the effective date of the Boiler MACT rule, September 13, 2007. The permitee has advised Ecology that they may elect the risk assesment to derive the hydrogen chloride limit for the boiler. Because it is uncertain what the limit for hydrogen chloride will be, Ecology will reopen the permit when the limit has been determined and install the boiler MACT requirements into the permit.

Regulatory Orders No. DE 98-AQI028 currently required KCWW to monitor No. 14 boiler visual opacity via Method 9. However, KCWW operates a continuous monitoring system (COMS) for opacity, which demonstrates that KCWW complies with boiler opacity limits. This requirement was imposed in 1998 when the No. 14 wood waste boiler was repermitted. The repermitting was to prevent the unintentional formation of a visual plume from No. 14 which was condensing outside the stack and hence was not being picked up by the No. 14 boiler COMS. The plume was ammonium chloride salt,

formed by the reaction of the ammonia being added to the stack for NO_x control and chloride in the wood waste. The repermitting allowed KCWW to discontinue ammonia addition to No. 14, which solved the plume problem. Visual opacity has been minimal since that time. KCWW requested that this requirement be eliminated in the permit application and that the requirement for visual opacity readings under Method 9 only be required during those rare times when the COMS is not operating. Ecology agrees, the visual observation requirement has been eliminated from the order and permit by Order 1908.

New sources are required to complete performance tests, notification and record keeping under 40 CFR 60. The new source requirements for the new hog fuel boiler (Boiler No. 14) were all completed by July 16, 1998.

Number 14 boiler limits and monitoring requirements are discussed below:

Permit Condition A.1 limit NO_x to 180 lbs/hr and 150 ppmv @ 7% O_2 for a thirty day rolling average. The emission has to be continuously monitored to assure compliance. The limits of 180 lbs/hr and 150 ppmv were derived in the NOC issued on July 16, 1998. The limit of 184.8 lbs/hr from 40 CFR part 60.44b(d) is also shown for completeness and was calculated assuming oil firing. This calculation provides the most restrictive limitation under this regulation. A continuous emission monitor (CEM) is used to pull a sample from the air emissions, and analyze the amount of NO_x present. The computer part of the CEM uses the air flow data entered from a previous source test and the NO_x present to calculate and then log the NO_x concentration. This information is used to calculate the pounds of NO_x per hour.

Permit Condition A.2 limits CO emissions from the boiler to 359 lbs/hr and 511 ppmv @ 7% O_2 for a 365 day rolling average. The limit were derived in the NOC order issued July 16, 1998. The emission must be continuously monitored to assure compliance.

Permit Condition A.3 limits SO_2 emissions from the boiler to 79.2 lbs/hr and shall be based on a 12 month rolling average. This limit was derived in the NOC order issued on July 16, 1998. The limit of 492.8 lbs/hr from 40 CFR part 60 is also shown for completeness. It was calculated using formula from the 40 CFR 60 and assuming oil firing. This calculation provides the most restrictive limitation under this regulation. The emmisions must be continuously monitored to assure compliance. Also, permit condition A3 requires the permittee to use 0.05 % sulfur fuel oil.`

Permit Condition A.4 limits the VOC emissions to 34.5 lbs/hr. This limit was derived in the NOC order issued on July 16, 1998. Yearly tests for VOC indicate virtually no emission of this pollutant due to the extremly efficient design and firing control of the unit. The VOC emissions from 1996 to 2004 range was 0.0 to 6.57 lbs./hour. Some source tests have indicated no detection for the pollutant. Yearly source test assure compliance for this parameter.

Permit Conditions A.5 and A.6 limit PM emissions to 17.4 lbs/hr PM10 and is largely a function of the total PM load. The limit for particulate is 0.011 gr/dscf. These limits were derived in the NOC order issued on July 16, 1998. The limit from 40 CFR part 60

of 61.6 lbs/hr is also shown for completeness. It was calculated using formula from the 40 CFR part 60 assuming oil firing. This calculation provides the most restrictive limitation under this regulation. Also shown for completeness is 0.1 gr/dscf from WAC 173-400. This is an order of magnitude less restrictive than the limit set by Ecology Order DE 98-AQI028. The emission from the source is monitored annually to assure compliance. Baghouse conditions are surrogate operating parameters for possible noncompliance with the particulate emission requirements. The baghouse condition will act as a trigger mechanism for taking corrective action. Exceedance of the trigger mechanisms is not by itself a violation of the permit. Failure to take corrective action is considered a violation of the permit.

Permit Condition A.7 limits opacity to 10%. This limit was derived in the NOC order issued on July 16, 1998. Opacity must be monitored continuously to assure compliance. The limit from 40 CFR part 60 of 20% is also shown for completeness. The requirements for visual observations once a week has been eliminated. The CEM for opacity and operation of the bag house are sufficent to assure compliance.

Permit Condition A.8 requires the Permittee to be in compliance with the Boiler MACT by September 13, 2007. Permit Condition A.9 requires the Permittee to track the amount of creosoted wood consumed and limit the amount to 500 tons per day. The requirement comes from NOC No. DE 04AQIS-5956.

Permit Conditions A.1 thru A.7 limits arrived at through a Notice of Construction (NOC) Approval Order DE 98-AQI028 per WAC 173-400-110, represent BACT for this emission unit.

Order No. 1908 will be issued at the time when the AOP is issued. Condition No. 27 of order DE 98-AQI028 requiring five EPA Method 9 visible opacity readings per week on No. 10 and 14 boilers was eliminated.

Pulping Operations

Kimberly-Clark cooks wood chips utilizing eight batch digesters. To perform a cook, a digester is loaded with wood chips and ammonium bisulfite cooking acid. The chips are then “cooked” for 8-9 hours. Toward the end of the cook, digester gas is relieved to high and low pressure accumulators (60 and 30 psig respectively). The digester is emptied of pulp into one of two dump tanks. Spent cooking liquor is employed to help flush out the digesters. No emissions occur during this process as all gasses vent to a sulfur dioxide (SO_2) recovery system. Unlike some sulfite mills, no “nuisance scrubber” is required for the Everett system configuration.

The pulp is pumped to a washer feed tank after the dump tanks. Because this slurry of pulp and spent sulfite liquor has a high SO_2 content, vapor is given off as the tank is filled. These emissions are vented into the same SO_2 recovery system collection manifold which serves the digester dump tanks.

The pulp is then washed in three counter-current two-stage pressure washers. The washed and cleaned pulp passes next to the high density storage chest, and thence to the

bleach plant. The washers are vented, and the gasses present also enter the SO_2 recovery system. Each washer is equipped with a filtrate tank which receives the wash-liquor (spent sulfite liquor). A portion of the liquor is returned to the flushing liquor tanks for reuse in the digester dumping operations. The remainder is discharged to the liquor filters (where any remaining fiber is removed) and then to the weak liquor storage tank. These pieces of equipment all vent to the SO_2 recovery system. See Figure 6-1 and 6.2 which depict the SO_2 collection and recovery systems.

The spent liquor is concentrated from approximately 12.5% to 52.5% solids in a six body, five effect evaporator. Each evaporator body is vented to a tail gas condenser to recover water vapor (condensate). Remaining gasses (primarily sulfur dioxide) are routed to the SO_2 recovery system. The condensate is hard-piped to the "contaminated hot well" (also vented into the SO_2 collection manifold). Liquor in the hot well is hard-piped to the secondary treatment plant.

The concentrated spent liquor is burned in a Babcock and Wilcox boiler (No. 10 boiler) to produce steam. Boiler flue gases pass to a cooling tower and then to an absorption tower. The absorption tower is a 17 foot diameter packed bed tower, consisting of two beds, one ten feet deep and the other five feet deep. While it serves to scrub out most of the SO_2 exhaust gas coming from the boiler, its primary purpose is to manufacture sulfite cooking acid. In fact, concentrated SO_2 gas (manufactured on-site from the burning of elemental sulfur) is introduced prior to the tower. All the gasses produced by the SO_2 recovery system (all the miscellaneous tank and process vents discussed above) are collected and maintained in the system. An aqueous ammonia solution is introduced to the absorption tower which reacts with the sulfur dioxide to make ammonium bisulfite cooking acid (NH_4HSO_3). The raw acid is collected from the absorption tower and pumped to the acid settling tank and thence to the fortification tower, where additional concentrated SO_2 is added. This acid passes to the acid storage tank and thence to the digesters.

Vent gas from the absorption tower passes to the Dynawave scrubber for additional particulate and SO_2 removal. Caustic is added here to regulate the pH to 6.0, which controls residual SO_2 emissions. After the scrubber, the exhaust gasses pass to a Brinks mist eliminator, which contains cylindrically shaped fiberglass mats called candles. These demisters remove additional particulate matter. The final exhaust then exits from the No. 10 stack.

Except for maintenance shutdowns, the pulp mill generally operates 24 hours a day seven days a week. Production levels do not vary greatly form year to year. In 2002 the total pulp production was 168,997 air dry unbleached short tons (ADUST), while in 2003 production was 173,628 ADUST. The principal raw material is wood chips. The principal chemicals used to convert the chips to sulfite pulp are sulfur dioxide and ammonia. Most of the SO_2 is made on site from the burning of elemental sulfur, while the ammonia is purchased and arrives by rail car.

Recovery Boiler/Secondary System (No. 10)

The No. 10 recovery boiler is a Babcock & Wilcox unit that burns spent sulfite pulping liquor (SSL) and is a part of the acid recovery process. The boiler is capable of burning approximately 1,375,000 pounds (dry solids) of spent liquor per day and producing approximately 380,000 pounds of steam per hour. Before exhausting to the atmosphere, the exhaust gas from the boiler passes to the "secondary system," which consists of a cooling tower, an absorption tower, a scrubber, and a demister. All of the sulfur dioxide (SO_2) emission sources in the pulping operations are also collected and passed to the secondary system. Acid production is the primary process function of this equipment, but the entire system also functions for pollution control purposes to remove SO_2 and particulate. The absorption tower produces the sulfite cooking acid by reacting SO_2 with ammonia, and hence also serves to remove most of the SO_2 from the boiler exhaust and other gas streams. The scrubber (a reverse-jet Dynawave unit) provides additional SO_2 and particulate matter control. The final step is a demister system which removes the bulk of the particulate and fine water droplets.

The No. 10 Boiler stack is the single emission point for the sulfite recovery boiler and the mill pulping operations and is assigned Ecology emission point number 12. The stack dimensions are 202 feet in height and 6 feet in diameter.

The recovery boiler operates as a base-load boiler for the mill because the chemical recovery operation tracks directly with the pulp production processes. Even though the digesters are a batch operation, there are a sufficient number of digesters to approach a steady-state operation for spent liquor burning. The amount of SSL burned in 2002 was 71,661,846 gallons and 68,863,008 gallons in 2002. Operational scenario options do not really apply in this case because the boiler burns whatever liquor is available. KCWW does have the option to burn natural gas to supplement the operation at times but does not routinely do so during normal operations.

One situation that occurs roughly annually is operation of the secondary system when the boiler is down for maintenance. During such periods the pulp mill may continue to operate, with the spent sulfite liquor being stored instead of being incinerated in the boiler. However, so long as the pulp mill is running the secondary system continues to operate to produce cooking acid and to recover SO_2 from the pulp mill operations. The No. 10 stack CEMS continues to operate during these events. However, opacity readings are often meaningless when the boiler is down, as there is a wet plume from the scrubber but no particulate from the boiler. The permit is conditioned so that opacity limits apply only when the boiler is firing either liquor or another approved fuel.

Most of the specific applicable requirements for the No. 10 boiler are identified in Regulatory Order No. 1908 from Ecology and are repeated in the Title V permit. Regulatory Order DE 1908 is consistent with the sulfite mill regulations found in WAC 173-410. Additional requirements appear in Regulatory Order No. DE 98-AQI028 issued July 15, 1998 which pertains primarily to the No. 14 wood waste boiler. Requirements of 40 CFR 63 Subpart S (Cluster Rule MACT I) are concerned with Pulping Operations and the HAPs emissons from the pulping system. The recovery boiler is the only emission point for HAPs related to the pulping system. The new requirements of the Cluster Rule MACT II as found in 40 CFR 63 Subpart MM regulates the recovery boiler.

The mill has conducted monthly source testing for particulate since the boiler started operating in 1974. The data showed that the boiler consistently operates in compliance with the Ecology limit of 0.06 grains/SCCF and the new EPA MACT II limit of 0.04 grains/SDCF. Under the terms of the new MACT II rule and a letter from Ecology dated October 12, 2004, KCWW is also conducting parametric monitoring of the demisters to insure that PM emissions are in continuous compliance. The Permittee requested that testing frequency for particulate be reduced to annually. Ecology agrees and is issuing Regulatory Order No. 1908 at the time the AOP is issued reducing the frequency for particulate testing to annually. However, if any particulate test exceeds the MACT II standard of 0.04 gr/dscf, the testing frequency will increase to quarterly until four test results are below 0.032 gr/dscf. This is 80% percent of the MACT II limit.

A similar request involves opacity testing via Method 9. KCWW operates a continuous monitoring system (COMS) for opacity, which demonstrates that KCWW complies with boiler opacity limits. However, there is currently a requirement to visually monitor opacity using Method 9. This requirement was imposed in 1998 when the No. 14 wood waste boiler was repermitted. The repermitting was to prevent the unintentional formation of a visual plume from No. 14 which was condensing outside the stack and was not being picked up by the No. 14 boiler COMS. The plume was ammonium chloride salt, formed by the reaction of the ammonia being added to the stack for NO_x control and chloride in the wood waste. The repermitting allowed KCWW to discontinue ammonia addition to No. 14, but directed that KCWW begin ammonia addition to No. 10 to reduce NO_x from that source. Ecology's objective was to ensure that the visual emissions problem did not transfer from one stack to the other, so the requirement for Method 9 testing on No. 10 boiler was added. However, adding ammonia to No. 10 did not impact its visual emissions. The boiler secondary system (the absorption tower, the demisters, and the Dynawave scrubber) continued to control stack opacity effectively. At no time since Method 9 testing began in 1998 has a visual opacity measurement indicated opacity over the required limit. Therefore, the Permittee requested that this requirement be eliminated. The requirement was eliminated by Order 1908.

The company requested that the initial performance test be waivered due to the extensive stack test data the company had amassed. On February 16, 2004, Ecology waviered the initial performance test. However, the company will be required to performed particulate source testing annually.

Permit Condition B.1 does not have a specific NOx limit for this unit. Its NOx contribution is limited by the total NOx limit set for both boilers (No. 10 and No. 14). The limit of 1400 ton/year on a rolling yearly average is defined by Permit Condition C.1. Permit Condition B.2 limit for SO_2 is 300 ppm set by order 1908 and is continuously monitored to assure compliance. Permit Condition B.3 set a limit for particulate of 0.04 gr/dscf. This limit is defined in 40 CFR 63 Supart MM – MACT II regulations. The limit for particulate is monitored annually to assure compliance. The frequency of stack tests was revised by Order 1908. Permit Condition B.4 limit for opacity is that the opacity be no greater than 35% for any six consecutive minutes. The opacity is continuously monitored to assure compliance. The visual observation requirements of once per week was eliminated by order 1908. Permit Condition B.5 limit for ammonia emission is 10 ppm @ 7 % O_2. Ammonia is monitored annually to assure

compliance. Permit Conditions B.6 defines the operational parameters for recovery boiler with respect to ammonia and production. No greater than 7,928,000 gallons of SSL per month can be burned. Permit Condition B.7 limits TRS emissions from the recovery stack as per WAC 173-410-040(5). Permit Condition C.1 defined the combined limit for NO_x is continuously monitored at both No. 14 and No. 10 Boilers to assure compliance.

Order No. 1908 will be issued at the time when the AOP is issued. Order No. 1908 eliminates condition No. 27 of order No. DE 98-AQI028 requiring the Permittee to perform five EPA Method 9 visible opacity readings per week on No. 10 and 14 boilers. Order No. 1908 changed the particulate testing to annually and eliminated conditions that no longer apply to the facility as specified in Attachment B of the order. Number 10 boiler emissions do not have the ammonia trail-off expected when Order No. DE 98-AQI028 was issued. The controlled devices eliminate the ammonia before the air flow is emitted. Therefore, keeping track of the ammonia feed rate is not needed. The condition has been eliminated by order 1908.

CAM Applicability – There are no parameters requiring a CAM plan for the No. 10 Boiler. SO_2 and NO_x are continuous monitored and therefore do not require a CAM plan. Particulate limit of 0.04 grain/sdcf is a MACT II source and is therefore exempt from CAM. The CMS for particulate is applicable to the recovery source. Opacity is not a CAM parameter.

The TRS emissions from No. 10 boiler were tested in February 2005 and were well below the 17.5 ppm limit (TRS values were 0.8 ppm, 1.0 ppm, and 1.4 ppm). A TRS emissions test result from 1991 was also well below the limit (0.5 ppm).

The No. 10 boiler recovers sulfur dioxide from the spent sulfite liquor (SSL) created in the pulping process. In the process of burning the SSL, sulfur dioxide is generated and recovered to make cooking acid used to produce more pulp. The boiler may generate some TRS residual, but not at the levels produced in a Kraft recovery boiler. Unlike a Kraft recovery boiler, the sulfite recovery boiler does not have a reducing smelt bed in the bottom of the furnace. The smelt bed generates TRS due to the lack of oxygen. In a sulfite recovery boiler the SSL is atomized and fired in the combustion chamber in suspension. One objective in operating the recovery boiler is to monitor excess oxygen to control combustion. Significant fireside corrosion can damage the boiler when operating with oxygen levels higher than target and combustion cannot be sustained at lower oxygen levels. The average excess oxygen level is measured with three probes and is monitored and logged hourly. There is a visual alarm if the average goes below 0.48% or above 2.0%. The controlled complete combustion in the boiler minimizes TRS generation. For these reasons, TRS emissions should always remain very low and annual emissions testing of TRS is sufficient to ensure compliance.

Power Boilers

The three power boilers at the Kimberly-Clark mill are used primarily to provide back up steam generation when either No. 10 boiler or No. 14 boiler is out of service. Boiler No. 7 was installed in 1953 and is a Riley F type, rated at 150,000 pounds of steam per hour (190 MM BTU/hour). It burns natural gas. Boiler No. 8 is a Combustion Engineering

model BU50-BPX and was installed in 1954. Boiler No. 9 is identical to No. 8 and was installed in 1955. Boilers 8 and 9 have a rating of 165,000 pounds of steam per hour (209 MM BTU/hour) each. Boilers 8 and 9 normally burn natural gas, but can also burn diesel fuel. The combined boilers burned some 425,885 MM BTU of natural gas in 2001, 178,603 MM BTU in 2002, and 293,309 MM BTU in 2003. In 2001, 19,640 gallons of diesel were consumed, but there was zero use of diesel in 2002 and 2003. There are no emission controls or CEMS on any of these boilers. However, KCWW must cerified each year in their compliance cerification that all diesel used had less that 0.05 % sulfur.

Each boiler has its own stack, providing three separate emission points. The Ecology emission point number is 22 for the three stacks. The stack dimensions (for each stack) are 102 feet in height and 6 feet in diameter.

These three power boilers can provide both peak steam demand service as well as backup to the recovery boiler (No. 10) and the wood-waste boiler (No. 14). The mill's operational steam needs dictate when these boilers operate. In 2002, they operated during parts of 15 weeks, and in 2003, during portions of 14 weeks. Gas is used preferentially to diesel, which normally is employed only during periods of gas curtailment.

Kimberly-Clark is also required by its insurers to perform annual flame safety tests on the No. 8 and 9 boilers. All fossil fuels able to be burned in the boilers have to be tested for flame safety. Flame safety checks are performed to verify boiler controls and systems work properly to protect against the hazard of a furnace explosion (from a collection of unburned fuel in the boiler) which in turn reduces the risk of personal injury, equipment damage, and plant downtime. No. 8 and 9 boilers have the capability to burn diesel and as such a yearly diesel test is required for each. During each diesel firing test, the atomizing steam is throttled to disrupt the air/fuel ratio and when the atomizing steam drops to a specific pressure, each boiler must automatically trip for a successful test. During these tests the stack flue gas for each boiler becomes very dark and heavy due to the upset air/fuel ratio. The dark emissions are present for approximately 15 minutes each (the duration of the test) and visible emissions may exceed 20 percent during this period. The flame test has been approved for both boilers with the condition that the permittee notifies Ecology that a flame test is to be conducted thirty days in advance. This provision is not necessary for No. 7 Boiler since it burns only natural gas.

Permit conditions D.1 and D.2 limit the monthly maximum and the monthly rolling average amount of oil and natural gas that can be burned in the boilers and require the permittee to report the amounts on the monthly air emission report. Permit condition D3 limit fuel to deisel with a sulfur content of the no greater than 0.05 % sulfur.

Catalytic Oxidizer (EM5)

The Everett mill's No. 5 paper machine was installed in 1979. It is different from conventional paper machines in that it uses a proprietary process to manufacture towel and wiper products. In this process, chemicals are added to the paper before it "cures" on a dryer. Some volatile organic compounds are released during this curing process, so a catalytic converter was designed into the paper dryer exhaust stream when the machine was built.

A Notice of Construction was required for the installation of this pollution control device. Ecology approved construction of the new paper machine in approval order No. De 79-335 on June 29, 1979.

The exhaust gas flow from the paper dryer is initially heated to 600 to 700 °F by a natural gas heater. The gas then flows through the catalyst section of the device. The bed is a honeycomb array that uses a platinum-based catalyst. The catalytic effect of the platinum effectively oxidizes the organic material at reduced temperatures. The treated gas discharges through a 44 inch vent on the paper mill roof. The Ecology emission point number is 25. Other emission points on this machine are categorically exempt insignificant emission units (IEU's).

Kimberly-Clark makes a variety of towel and wiper products on the No. 5 machine. Different brands use different furnish components. Additives, agents, and dyes can vary widely between products and within the same product options. These scenarios are not as important as the steady baseline operation of the catalytic oxidizer. It runs at a constant level of performance and responds to the range of product operations.

Permit condition E.1 limits particulate to 50 lbs/day. Less than 5 lbs per day is emitted based on calculations using EPA AP 42 emission factors. Permit condition E.2 limits hydrocarbon to 100 lbs/day. Less than 5 lbs per day of VOC (hydrocarbon) is emitted using NCASI TB 646 factor for calculations. Annual source testing is performed to assure compliance. Since both emissions of particulate and VOC emissions have been a great deal lower than the limits for these pollutants, the condition that the record keeping of the date the catalyst was changed has been eliminated from the permit condition E.2. Tracking the gas usage and performing the calculations are sufficient for compliance.

CAM Applicability – The No. 5 machine is exempt from the CAM regulations because the potential pre-control device emissions are less than the major source applicability thresholds. Therefore, the CAM requirements do no apply to this source.

Bleach Plant

The screened raw pulp from the pulp mill is brown in color due to the presence of residual lignin compounds. It is treated in the bleach plant to remove the remaining lignin so that the finished pulp will be suitable for tissue manufacture and subsequent sale. The brown pulp is whitened using bleaching chemicals. After bleaching, the

whitened pulp is further screened and cleaned using centricleaners and then the pulp is either pumped in slurry form to the paper mill or is dried on pulp drying machines for storage and subsequent reuse or sale.

Prior to October 2000, the bleach plant used a typical three-stage chlorination process with the sequence being CE_oH (chlorine, caustic extraction with oxygen, and sodium hypochlorite). This original bleaching process had numerous emission points from the individual bleaching cells and from the pulp washers following each bleaching stage. However, to comply with the requirements of the EPA Cluster Rule, in October of 2000 the bleaching process was changed to an elemental chlorine free (ECF) sequence and a new bleach plant scrubber was installed. The new sequence is $DE_{op}D$: a chlorine dioxide first stage, caustic extraction in the second stage with oxygen and peroxide, and a chlorine dioxide third stage. A chlorine dioxide (ClO_2) generator was also installed to make ClO_2 on site.

All beach plant unit operations now vent to the bleach plant scrubber, as does residual chlorine dioxide gasses from the ClO_2 generation system. The scrubber is a fluidized bed device manufactured by Bionomic Industries. The scrubbing medium is caustic and sodium hydrosulfide. The Ecology emission point number is 24. The scrubber stack sits on the bleach plant roof, 76 feet above ground level. The stack has an 18 inch diameter outlet.

The $DE_{op}D$ bleaching sequence is a continuous process. Other than minor changes in chemical charge to address differences in pulp quality and species (both softwood and hardwood pulps are processed at different times), normal operations do not change much from day to day. The scrubber is capable of reducing emissions of chlorinated compounds below required levels regardless of pulp grade or the quantity of chlorine dioxide applied. In fact, very little of the chlorinated compounds needing treatment originates in the bleach plant proper. The principal job of the scrubber is to remove residual chlorine and chlorine dioxide from the chlorine dioxide generator exhaust.

Periodic maintenance of the scrubber is required to ensure its optimization and efficiency as a pollution control device. The scrubber nozzles and interior surfaces tend to coat up after a few months which can reduce the flow of scrubbing liquid and thus reduce scrubber efficiency. It has been found that washing the scrubber with hydrochloric acid can restore it to normal operational conditions. During this washing process, manufacture of chlorine dioxide is curtailed to mitigate and minimize emissions. The bleach plant typically continues to operate utilizing chlorine dioxide solution from the storage tanks. No objectionable odors have been detected inside the bleach plant during these maintenance events.

Since installation of the new bleach plant, source tests have been conducted on the scrubber. After startup, these were done quarterly but are now performed annually. Routine testing is for chlorine, chlorine dioxide, and carbon monoxide, although tests for additional compounds were conducted shortly after startup. Chlorine is rarely detectable and, if detected, has always been below the limit of 10 ppmv.

Applicable requirements are principally found in two documents. First is Ecology Regulatory Order No. DE 99AQIS-2, which is the Notice of Construction approval for the bleach plant upgrade and the new scrubber. Second is the Cluster Rule MACT I regulations, 40 CFR 63, Subpart S.

CAM Applicability - The bleach plant scrubber is exempt from CAM applicability because it is a control device subject to MACT I requirements. However, the MACT I rules requires a continuous monitoring system be installed. The permittee will measure the motor amperage of the fan motor as a surrogate for flow and pH of the scrubber on the chlorine dioxide generator control system. The motor amperage is allowed in the guidance from EPA "Questions and Answers (Q & A) For the Pulp and Paper NESHAP (40 CFR Part 63, Subpart S), September 22, 1999. Otherwise, there are no controls for CO; and therefore, CAM does not apply. The approved monitoring plan is included in the back of this document. The monitoring plan is incorporated into the permit by reference.

One requirement of Order No. DE 99AQIS-2 is that KCWW evaluate visual opacity from the bleach plant scrubber using Method 9. The scrubber is not a combustion source. Opacity readings taken on the scrubber discharge since startup four years ago demonstrate zero opacity. The Permittee requested that the requirement for opacity readings be discontinued as part of this regulatory update. The visual opacity requirement has been eliminated in Regulatory Order 1908. The order requires that if any visual emissions other than condensed water are notice, the permittee must investigate and correct the problem within one hour and perform a EPA method 22 visual observation on the emissions.

MILL WIDE GENERAL REQUIREMENTS

WAC 173-410-040(1)(f) specifies that emissions from any emissions unit, other than a recovery system, a blow system or an acid plant, shall not exceed 1000 ppm of sulfur dioxide, corrected to seven percent oxygen in the case of combustion unit, for any hourly average. The 1000 ppm requirements of WAC 173-410-040(1)(f) is met if the permittee uses diesel with a sulfur content of 0.05 % in numbers 7, 8, 9, and 14 boilers and when burning wood in number 14 boiler. Therefore, no monitoring is required. The limit is placed in the permit as a general requirement. The Permittee is required to keep receipts throughout the year and certifies that they only used diesel with less than or equal to 0.05 %.

Data recovery has been placed in the permit as a footnote to all of emission unit specific requirements, i.e., A – J, that require continuous monitoring after considering the analysis given below:

A. WAC 173-401-615 authorizes Ecology to employ the data recovery language included in the initial round of Industrial Section Title V permits.

Every continuous monitoring system (CMS) fails to record process data during calibration checks, zero/span adjustments, routine maintenance and unplanned monitor malfunctions. EPA standards that require continuous monitoring typically specify minimum data recovery requirements and identify circumstances when a CMS is not

expected to record process data. Ecology new source approval orders and PSD permits traditionally did not include explicit data recovery conditions, because Ecology did not routinely expect its sources to report CMS down time.

WAC 173-401-615(1)(c) specifies that the each Title V permit must contain "As necessary, requirements concerning the use, maintenance, and, where appropriate, installation of monitoring equipment or methods." In the first round of Title V permits the Industrial Section included a 90 percent data recovery requirement, based in part on the above-quoted rule, in part on data recovery language in WAC 173-400-105(5)(h), and in part on the Industrial Section's June 1, 1988 Continuous Emission Monitoring Guidance, which specified a 90 percent data recovery rate. The Ecology condition specified that it did not apply where an applicable requirement contains more stringent requirements.

First, as documented below, no CMS provision that applies to Washington pulp mills imposes a more stringent data recovery requirement than the less than 10% down time allowance included in this permit. Many federal rules unconditionally excuse any amount of monitor downtime, subject to standard prohibitions against circumvention.

Second, WAC rules and Ecology approval orders that impose continuous monitoring requirements without specifying data recovery provisions should not be construed as demanding 100 percent data recovery. They are simply products of a simpler era in which Ecology did not believe it necessary to address monitor downtime in permits. Ecology never expected its sources to achieve 100 percent data recovery for CEMs. A 1988 CEM guidance accurately reflects Ecology's expectation that "Monitoring equipment should operate correctly at least 90% of the time on an annual average."

B. No applicable requirement imposes a data recovery requirement more stringent than the language in the Industrial Section Title V permit shell.

Washington pulp mill CMS requirements derive from NSPS rules, MACT rules, SIP rules, PSD permits and new source approval orders. In the future they may derive from the CAM rule. All of these categories of "applicable requirements" recognize that there will be times when data cannot be recovered, although most of them are less specific than the Ecology permit language. (40 CFR §60.13(e**);** 40 CFR 63.8(c)(4))

NSPS Rules

EPA's New Source Performance Standards unconditionally excuse CMS downtime resulting from "system breakdowns, repairs, calibration checks, and zero and span adjustments . . ." 40 CFR 60.13(e). There is no requirement that a CMS recover valid data during at least X percent of the time that the monitored process operates. EPA does require the owner to submit a semi-annual report that lists periods during which the CMS was inoperative for reasons other than zero and span checks. 40 CFR 60.7(c)-(d). A more detailed report must be submitted if the CMS downtime exceeds 5 percent of the total operating time for the reporting period.

The NSPS data recovery requirement is *less stringent* than the data recovery condition included in the permit shell, because the NSPS provision does not impose a minimum 90 percent recovery requirement, it does not require a showing that "the malfunction was unavoidable and is being repaired as expeditiously as possible," and it does not condition the 10 percent downtime allowance on "the permittee providing an acceptable explanation for the loss of monitoring data."

MACT Rules

Subpart A of 40 CFR Part 63 states: "Except for system breakdowns, out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments, all CMS, including COMS and CEMS, shall be in continuous operation . . ." 40 CFR 63.8(c)(4). A specific MACT standard may not incorporate all of the general boilerplate in Subpart A. Subpart MM, the MACT standard for kraft and sulfite mills, contains its own data recovery rule in 40 CFR 63.864(h). It states: "Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator of the affected source or process unit must monitor continuously . . ."

The MACT data recovery conditions are *less stringent* than the data recovery condition included in the permit shell, for the same reasons noted above with regard to NSPS Subpart A.

SIP Rules

WAC 173-400-105(5)(h) states: "A source may be temporarily exempted from the monitoring and reporting requirements of this chapter during periods of monitoring system malfunctions provided that the source owner(s) or operator(s) shows to the satisfaction of ecology or the authority that the malfunction was unavoidable and is being repaired as expeditiously as possible." The term "this chapter" refers to WAC ch. 173-400. However, WAC 173-405-077 and WAC 173-410-067 apply the provisions of WAC 173-400-105(5) to "all sources to which this chapter is applicable," i.e. to kraft mills and sulfite mills subject to WAC ch. 173-405 and 173-410 CMS requirements.

WAC 173-400-105(5)(h) is *less stringent* than the data recovery condition included in the permit shell, because the permit shell imposes a 90 percent minimum data recovery requirement, and the rule does not.

PSD permits and new source approval orders

New source review in Washington is conducted pursuant to WAC 173-400-110 (New Source Review) and WAC 173-400-141 (Prevention of Significant Deterioration). These sections authorize Ecology to include emission limits and monitoring requirements in PSD permits and approval orders. The language in WAC 173-400-105(5)(h) authorizing Ecology to temporarily exempt sources from "the monitoring and reporting requirements of this chapter" during monitoring system malfunctions applies to CMS obligations

imposed through the new source review process, because the regulations that authorize Ecology to impose CMS conditions in an approval order or PSD permit are part of "this chapter."

CAM Rule

The next round of Title V permits will incorporate CMS obligations imposed under the CAM rule. The CAM Rule, 40 CFR Part 64, requires parametric monitoring of certain larger emission units. The CAM data recovery rule states: "Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating." 40 CFR 64.7(c). Subsection 64.9(a)(2)(ii) requires the owner to include in its Title V periodic reports "Summary information on the number, duration and cause" for monitor downtime incidents other than downtime associated with zero and span and daily calibration checks.

Because of the above arguments we are placing the 90 percent data capture contained in the facility wide conditions of previous permit as a footnote to those CMS requirements in Tables A through J of the permit. The data recovery exception is only for data loss due to malfunctions and must be less than 10 percent in a month.

MACT STANDARDS

The permittee is regulated by the 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories. At present the following Source Categories applies to the KCWW mill:

1. 40 CFR 63 Subpart S that regulates the pulping and bleaching process. Subpart S requires the mill to control the hazardous air pollutants (HAPs) with maximum achievable control technology (MACT) from the digesters vents, the brown stock washer's vents, and the evaporator's vents and the emissions from the bleaching system. The requirements of 40 CFR 63 Subpart S is commonly known as the MACT I standards.
2. 40 CFR 63 Subpart MM that regulates the emissions of HAPs metals from recovery boilers. The requirements of 40 CFR Part 63 Subpart MM is commonly known as MACT II.
3. 40 CFR 63 Subpart DDDDD that regulates the emissions of HAPs from hogged fuel boilers. The requirements of 40 CFR 63 Subpart DDDDD is commonly known as the boiler MACT.

MACT I requirements

On April 15, 1998, the Environmental Protection Agency promulgated amendments to 40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart S - National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry, Sections 63.440 – 458, commonly called maximum

achievable control technology (MACT I). The MACT I requirements were adopted by reference by WAC 173-400-075 (5). KCWW was required to be in compliance with the rules by April 16, 2001. On November 2, 2001 (DE 01AQIS-3298), Ecology issued a compliant order to KCWW relating to the MACT I requirements. As of this date the company is in compliance with the applicable MACT I requirements defined by the order. The order was directly taken from 40 CFR Part 63, Subpart S and stated what the Permittee had to do to be in compliance with 40 CFR Part 63, Subpart S. The compliance part of 40 CFR Part 63, Subpart S is still applicable; and, therefore, can be placed in the permit. DE 01AQIS-3298 can be rescinded when the permit is issued without any loss of any applicable permit compliance requirements. The mill is in compliance with the order. DE 01AQIS-3298 will be rescinded when the permit is issued.

MACT I defined in 40 CFR Part 63, Subpart S requires that emissions from this source group be controlled so that the total emissions from the following emission points - digester system vents, evaporator system vents, and each pulp washing vents - emit no more than 1.1 kilograms of total HAP or methanol per oven dried mega gram of pulp (2.2 pounds per oven dried ton of pulp – (ODTP)) [40 CFR Part 63, §63.444(c)(2)(i)] or remove 87 percent or more weight of the total HAPs or methanol[40 CFR Part 63, §63.444(c)(2)(ii)].

The company chose to be in compliance with the 2.2 lbs. HAPs/ODTP. Methanol is the surrogate for HAPs. The company had already installed a closed system for the pulping process including the brown stock washer, the digester, the acid plant, and the recover boiler. The company performed an analysis on the requirements of MACT I for all of the system that generates HAPs. The recovery system stack was the only emission point that emitted gaseous HAPs. They tested the recovery stack emissions for methanol – a surrogate for HAPs – when performing the 2002 over all mill's methanol balance and found that it emitted 0.105 pounds of methanol per oven dried ton of pulp (ODTP).

The total mill emission from all three regulated sources is 0.105 lbs. methanol per ODTP. The permittee meets the limit of 2.2 pounds of methanol per ODTP with no controls; therefore, the continuous monitoring system required by 40 CFR 63.453 is not applicable since there is no control equipment. These data came from the tests performed in the 2002 methanol balance. However, they will have to perform the annual leak test and the monthly inspections on the closed system.

On March 23, 2004, the permittee requested an alternate testing procedure for methanol related to the leak test required by 40 CFR 63.453(k)(3). They requested through the Ecology's office directed to the Environmental Protection Agency (EPA) in Research Triangular Park, North Carolina that they be allowed to test for sulfur dioxide instead of methanol to determine if there were any leaks in the system. On May 7, 2004, EPA approved the monitoring of sulfur dioxide instead of methanol for the annual leak test to be performed with an electrochemical sensor (Industrial Scientific Corporation Model ATX 612 or an EPA approved equivalent). A leak was redefined as 5 ppmv sulfur dioxide instead of 500 ppmv methanol.

For sulfite mills, EPA is concerned with emissions of Hazardous Air Pollutants (HAPs) from digester system vents, evaporator system vents, and pulp washing system vents. However, KCWW has no such emissions. Unlike some sulfite operations, the Everett mill has never had nuisance scrubbers on the digesters as all digester gasses relieve back through high and low pressure accumulators to the sulfite cooking acid production system. Vent gasses from the red liquor evaporators are hard-piped back to the acid-making system; digester dump and washer feed tank vents, along with pulp washing and red liquor storage system exhaust piping, enter the acid-making system as well. These gasses, along with fortified sulfur dioxide gas from the sulfur burners, exhaust gas from the sulfite recovery boiler, and aqueous ammonia, enter the absorption tower where ammonium bisulfite cooking acid is manufactured. Residual exhaust gasses from the absorption tower travel to the Dynawave scrubber and the demisters for removal of SO_2 and particulate matter before discharge from the sulfite recovery boiler stack.

The SO_2 collection and control system was installed in 1974, when the No. 10 boiler was built. The Dynawave scrubber was installed in 1990 for additional SO_2 removal and to keep excessive particulate away from the mist eliminator, which prior to the Dynawave installation plugged frequently. This system thus preceded the Cluster Rule by a number of years, and was not installed for the purpose of removing hazardous air pollutants (HAPs). The section of 40 CFR Part 63 Subpart S concerned with pulping operations addresses the emissions of hazardous air pollutants, primarily a kraft mill issue. Methanol, as the far most prevalent HAP present, is used as a surrogate for monitoring purposes. The Cluster Rule does not deal with SO_2. Methanol is used as a surrogate for pulping system HAP. The only discharge point for methanol is the No. 10 boiler stack.

When the Cluster Rule was originally proposed in 1993, the facility performed tests on the No. 10 boiler exhaust stack, to determine if any methanol could be detected. The first three tests were conducted by the Roy F. Weston Company utilizing the NCASI test method. A fourth test was performed by AmTest and utilized EPA Method 308, as found in 40 CFR Part 63 Appendix A. The final analysis also utilized Method 308, and was run as a formal performance test to satisfy the terms of 40 CFR 63.444(c)(2); the data was submitted to Ecology on June 12, 2001.

Pulp Mill Methanol Emissions

Date	Av. Conc., ppm	Lb./Hour	Lb/ODUT
12/20/93	2.3	1.0	0.07
2/14/95	11.1	5.1	0.27
6/16/95	2.3	1.0	0.04
12/7/98	11.0	5.7	0.32
5/1/01	8.8	3.6	0.18
Average:	7.1	3.3	0.17

Each test result is the average of three runs. Roughly half the test results were below the detection limit; in order to compute averages, a value equal to one half the detection limit was used for calculation in those cases.

The requirements of 40 CFR 63.444(c)(2) limit total methanol emissions from pulping operations to 2.2 pounds per oven dried unbleached ton. The tests above show that the No. 10 boiler emissions are well in compliance with this limit. Although not installed for this purpose, the acid making and SO_2 collection systems (the "secondary systems") appear to do more than an adequate job of collecting methanol and similar HAPs.

The secondary system and SSL evaporators discharge effluents to the "contaminated hot well." To prevent losses of SO_2, all contributors to the hot well are hard piped to it, and this sump is in turn hard piped to the activated sludge wastewater treatment system.

An overall methanol balance for the site prepared for toxic release inventory (TRI) reporting purposes has been developed, which indicates that emissions of methanol via volatilization from the secondary wastewater treatment plant are considerably less than those from the No. 10 boiler. The balance was developed with actual measurements of effluents from different parts of the processes, and validated against theoretical limits as found in the literature.

The balance indicates that some 16.2 #/ODUT of methanol are produced in the pulping process. Of this amount, approximately 0.2 #/ton is lost from the recovery boiler stack. The remaining 16.0 #/ton passes to the contaminated hot well and thence to secondary wastewater treatment. The wastewater treatment system is a large sink for methanol. According to NCASI factors, in secondary treatment some 99.8% of the methanol is biodegraded, while 0.1% passes to the effluent and 0.1% is volatilized. Thus of the 16.0 #/ton of methanol entering secondary treatment, theoretically only 0.016 #/ton enters the atmosphere, a tenth of the amount lost from Number 10 boiler. So evaluating the emissions from No. 10 boiler should be an acceptable way to gauge compliance with the 2.2 #/ton limit.

No further testing will be required within the permit except the annual leak test for sulfur dioxide. However, a one time percent removal of methanol across the wastewater treatment system was required in the conformational email dated September 16, 2004 affirming that the mill was not required to have any controls on the pulping system for

methanol. The MACT I regulations for sulfite mills do not require efficency study of methanol removal across wastewater treatment systems. Although the study was not required by MACT I regulations, Ecology wanted to obtain the efficency of methanol removal through the company's secondary wastewater treatment system inorder to ascertain the final fate of the methanol. The study showed that 97.87 percent of the methanol was being destroyed in the company's wastewater treatment system derived from an average of five tests conducted Febraury 2005 through April 2005. The percent removal required in the MACT I rule for sulfite mill from air sources control devices is 87 percent. The removal efficency of the wastewater treatment system is greater than that required for MACT I air sources for sulfite mills. Therefore, the option of no control devices is the correct option. The company will not be required to perform any further monitoring for methanol related to the wastewater treatment system. However, they are required to perform future performance tests if they should change the amount of methanol routed to the recovery stack emission point as defined in the above email.

The MACT I regulations required that the permittee control the emissions from the bleaching system. On November 16, 1999, a notice of construction (NOC order) was issued by Ecology for the construction of the chlorine dioxide generator. The NOC order will be amended when the AOP is issued to elminate the EPA Method 9 visual opacity observations. The federal regulations, 40 CFR Part 63 Subpart S require the control and limit the sulfite bleaching system.

The treatment device outlet mass emission rate of (0.001 kg of total chlorinated HAPs excluding chloroform per megagram of oven dried ton of pulp (0.002 lb/ODTP) or an outlet concentration of less than 10 ppmv or less of chlorinated HAPs excluding chloroform (40 CFR 63.445(c). The order allowed chlorine to be used as a surrogate for the total chlorinated HAPs

The company will be required to perform monthly inspections on closed pulping system and chlorine dioxide generator. The company will be required to record the information of the inspections required by 40 CFR 63.453 (k) (1) – (4). The company has no bypass line; therefore, 40 CFR 63.453 (k)(5) does not apply and is not included as a requirement.

The current national pollutant discharge elimination system (NPDES) permt was issued on December 24, 2003 and modified on November 15, 2004. The NPDES permit required the company to be in compliance with 40 CFR Part 430.54. Therefore, the company is in compliance with the chloroform reduction requirements of 40 CFR Part 63 (d)(1)(iv).

As stated earlier, the permittee has a closed system for capturing suflur dioxide. Therefore, the requirements of 40 CFR 63.450 are fulfilled. The leak test will be performed by testing for sulfur dioxide where a leak is determined by any detection greater than 5 ppm_v sulfur dioxide instead of 500 ppm_v methanol as approved by EPA.

MACT II requirements

The Environmental Protection Agency (EPA) promulgated 40 CFR Part 63 Subpart MM (National Emission Standards for Hazardous Air Pollutant (HAPs) for the Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills on January 12, 2001 – MACT II requirements. The MACT II requirement was adopted by reference by WAC 173-400-075 (5). As part of these regulations, KCWW in Everett, Washington was required to control particulate as a surrogate for HAPs emissions from their sulfite recovery furnace. The limit for particulate emitted under MACT II is 0.04 gr/scfm. The permittee submitted eleven years of particulate data from stack tests performed on the emissions from the recovery furnace. The highest value in the data was 0.02 gr/scfm at 8 % oxygen. The Permittee requested that the initial performance test be wavered. On February 16, 2004 the performance test was wavered by Ecology.

The recovery furnace at KCWW facility controls particulate with five banks of Brinks demisters. Part 63 Subpart MM of 40 CFR (MACT II) requires the emissions from the recovery stack to be control for particulate to no greater than 0.04 grains/dscf. The test data for the source showed that the Brinks demisters control system met the particulate limit imposed by MACT II. The Brinks demister control system is considered another method of control from those defined in Part 63.864(a) (1) through a(3). Part 63.864(a)(5) states that facility with control devices other than those defined in Part 63.864(a) (1) through a(3) must monitor parameters approved by the Administrator using method and procedures in Part 63.865(f) which require a monitoring plan be submitted and approved by the Administrator. The Administrator is defined as a state that has been delegated the authority of this part.

Ecology reviewed the submitted plan and approved it on October 12, 2004. The monitoring plan has been revised to place upper values for the parameters listed below. The approved monitoring plan is included in the back of this document.

- #10 Boiler liquor burning rate in gallon per minute
- Pressure leaving the demister bank in inches of water column
- Pressure leaving the absorption tower in inches of water column
- Pressure leaving the stack booster fan in inches of water
- Differential flow rate through each of the individual demister bank

The approved monitoring plan satisfies the continuous monitoring system requirements. The approved monitoring plan is incorporated by reference into the permit.

Boiler MACT

The Boiler MACT standard (40 CFR 63 Subpart DDDDD) was promulgated September 13, 2004. While compliance with the provisions of this new rule is not required until 2007, it will become an applicable requirement during the term of this permit. The permit will be modified to place the boiler MACT requirements into the permit when they are finalized.

INSIGNIFICANT EMISSION UNITS

The facility-wide general requirements apply to the whole facility, including insignificant emission units and activities (IEUs), as required by the operating permit rule. The rule states, however, that IEUs are not subject to monitoring requirements unless the generally applicable requirements in the State Implementation Plan (SIP) impose them. [WAC 173-401-530(2)(c)]. The Washington SIP does not impose any specific monitoring-related requirements for the facility-wide requirements for IEUs at this source. The permit, therefore, does not require any testing, monitoring, reporting, or recordkeeping for insignificant emission units or activities.

REGULATORY ORDERS

The permittee is subject to regulatory orders. Order DE 78-106 was issued to direct the sulfite pulp mill source to be in compliance with the new WAC regulation WAC 173-410. Order DE 78-106 contained requirements for parts of the mill that no longer exist. Also, it contained regulatory language that is obsolete. Therefore, Order DE 78-106 will be rescinded and Order No. 1908 will be issued to replace the requirements applicable to the mill when the AOP is issued. The new order brings the requirements up to date with the mill configuration and the current regulations. Notice of construction orders were issued for pollution control equipment for a new paper machine number 5 (Order DE 79 - 335), for the new No.14 Cogeneration Boiler (Order DE 98AQI028), for the bleach plant chlorine dioxide generator (DE 99AQIS-2) – the order will be amended by Order 1908, for number 4 paper machine modification (02 AQIS-3575), for in line natural gas burners for paper machine number 3 (DE 1522 AQ04), administrative orders for compliance with MACT I requirements (DE 01AQIS-3298) – the order will be rescinded by Order 1908, and Order DE 04AQIS-5956 to allow burning creosote treated wood in number 14 boiler. A majority of the most stringent emission limits for the facility are contained in these orders.

These orders establish source-specific limitations, but also include default limitations established by state regulations. Orders are not intended to be separate legal sources for default limitations that are based in state regulations. Therefore, for limits derived directly from state regulations that were included in Regulatory Orders for convenience purposes, Ecology considers the regulation and not the Order to be the “applicable requirement” for purposes of Title V.

Some of the statements in the orders have been completed and will not apply to the Title V permit. Applicability of these orders are discussed below:

Order DE 78-106 – was issued to direct the sulfite pulp mill sources compliance with the new WAC regulation WAC 173-410 - none of the conditions in this order applies to the AOP since it is being rescinded and replaced with order 1908.

Order DE 79-335 - notice of construction orders were issued for pollution control equipment for number 5 paper machine – none of the verbiage before “IT IS ORDER” applies to the AOP since it is exclamation. The limits that apply to paper machine number 5 constructed under the NOC are 50 pounds of particulate and 100 pounds of hydrocarbon per day.

Order DE 98AQI028 – Condition 1 – 27 are conditions that apply to the AOP found in the order. Condition number 1 has been completed and conditions number 25 has been modified and condition 27 has been eliminated by Order 1908. Conditions 1 and 27 no longer apply to the AOP. The part of condition 25 that deals with documenting the ammonia injection feed rate no longer applies to the permit. EPA method 9 is still the reference method for opacity. All of the conditions except 1 and 27 and the part of condition 25 that was eliminated apply and are either in the special condition A – J or in the general conditions of the AOP.

DE 99AQIS-2 – notice of construction order will be amended in Order 1908 to be issued when the permit is issued. Conditions 1 – 12 are related to administration of the NOC. Condition 13 has been eliminated. Conditions 14 – 22 are applicable and are either in the special condition A – J or in the general conditions of the AOP.

02 AQIS-3575 – notice of construction for number 4 paper machine modifications – Condition 10 has been eliminated. The only other requirement other than administrative in the order is that the Permittee was required to complete a performance test on NOx, SO_2, CO, VOC, PM_{10}, and opacity. The required performance tests have been completed. There are now no conditions in the order related to Title V and therefore, nothing in the order will be included in the AOP.

DE 1522 AQ04 - in line natural gas burners for paper machine number 3 - the only requirement other than administrative in the order is that the Permittee was required to complete a performance test on NOx, SO_2, CO, VOC, PM_{10}, and opacity. The required performance tests have been completed. There are no conditions in the order related to Title V and therefore, nothing in the order will be included in the AOP.

DE 01AQIS-3298 - administrative orders for compliance with MACT I requirements - This order will be rescinded by Order 1908 to be issued when the permit is issued. Ecology recognizes that 40 CFR Part 63 Subpart S applies and has all of the requirements related to the emissions from the pulping system and the bleaching system.

DE 04AQIS-5956 - allow burning creosote treated wood in number 14 boiler – the only applicable condition in the notice of construction is that the company burns no more than 500 ton of creosoted treated wood per day and must keep records of the amount of creosoted treated wood consumed. The company is allowed to burn outdated postage stamps, controlled substances from law enforcement agencies, and oil contaminated paper generated on site. All other parts of the NOC are administrative requirements.

40 CFR Part 63 Subpart S will be used to define the AOP conditions for the pulping system. In 1999 EPA at Research Triangle Park in their question and answer paper stated that amperage of the fan motor could be used as a CMS for flow from the chlorine dioxide generator control device. We will allow the amperage to be used as the monitoring requirement of the generator pollution control for chlorine.

MONITORING PLANS

May 18, 2005

Mr. Don Nelson
Department of Ecology
P. O. Box 47706
Olympia, WA 98504-7706

Dear Mr. Nelson:

Kimberly-Clark Everett is submitting the following demister monitoring plan to comply with MACT II PM monitoring requirements for our #10 recovery boiler.

The equipment that controls PM emissions are fiber packed demisters. The #10 Boiler SO2 recovery operation utilizes six tanks of demisters containing 19 sets of vertical candles to remove particulate from the flue gas stream. Normally five of the tanks are in operation while one is on a wash cycle. There is no way to operate the recovery boiler or acid plant without at least one tank in service. One tank of demisters is put on wash during each 12 hour shift. The units are washed to remove particulates that coat the filtration elements.

Operating parameters pertinent to the operation and condition of the fiber packed demister tanks will be used as parametric monitoring. These parameters are recorded once every two hours (continuous if on the CEMS) and are logged in an electronic data base. The acid maker, who is responsible for the operation of the demisters, monitors these parameters to assure that the demisters are operating properly.

The following parameters are recorded:

Monitoring Parameter	Target Parameter Range	Description	Monitor Quality Assurance
% Opacity of the flue gas stream leaving the stack	<35% for 6 consecutive minutes (permit limit)	The opacity gives a general indication of the amount of particulate leaving the stack. Opacity is recorded on the CEMS.	CEMS – daily calibration and permit required Performance Evaluation.
#10 Boiler Liquor burning rate (gpm)	<225 gpm (operationally derived target)	This value gives a general indication of the flue gas flow rate. A large burn rate yields higher flow rates through the demisters and generally a larger pressure drop across them.	Annual check of the transmitter by Instrument Mechanic.
Pressure leaving the demister tank (in H_2O)	<25 in H_2O (operationally derived target)	The normal range for this value is -16 to -22 inches of water column. A large value for this variable may	Purged monthly and annual verification of the transmitter by Instrument Mechanic.

		indicate that the demisters are becoming fouled. A low value for this variable may indicate a low flow rate through the demisters or void in the filtration media of one of the tanks.	
Pressure leaving the Absorption tower (in H_2O)	<6 in H_2O (operationally derived target)	The stack booster fan speed is varied to control this value to zero.	Purged monthly and annual bench calibration by Instrument Mechanic.
Relative flow rate through each of the individual demister tanks.	Tank No. 1: <60% Tank No. 2: <60% Tank No. 3: <65% Tank No. 4: <70% Tank No. 5: <70% Tank No. 6: <70% (operationally derived targets)	The flow rate through each tank is reported in 0-100% range. It is only a relative flow rate. The measurement cannot be accurately calibrated and is only used for a rough indication of the flow. A drastic change in this value could indicate a problem with a particular demister tank.	Daily visual check of flow rates by Instrument Mechanic to ensure reading is <5% when a tank is in wash. Calibration as needed by Instrument Mechanic.

The operationally derived targets are based on a statistical analysis of the data recorded for these parameters between May 1, 2004 and May 1, 2005. During this same time period, the PM emissions were tested monthly. Under these operating conditions, the PM emissions remained well below the MACT II limit of <0.04 grains/SDCF. Thus maintaining these conditions should ensure compliance with the PM limit.

MONTH	2004	2005
January	0.0084	0.006
February	0.0102	0.0069
March	0.0084	0.0061
April	0.0085	0.0166
May	0.0092	
June	0.0096	
July	0.0074	
August	0.0088	
September	0.0078	
October	0.0061	
November	0.0054	
December	0.0117	
AVERAGE	**0.0085**	**0.0089**
STD DEV.	**0.0017**	**0.0051**
MAXIMUM	**0.0117**	**0.0166**

Appendix A is an updated monthly demister report that will be submitted to Ecology. This report includes the parameters that will be monitored to ensure compliance with the particulate matter limit.

If a problem is suspected with the operation of the demisters, a demister opacity test will be performed to determine which body, if any, may be suspect. Appendix B is the opacity test procedure. Appendix C is the data sheet for recording the results of the opacity test.

If you have any questions on this monitoring plan, please feel free to call me at 425-259-7525.

Sincerely,

Christine Kurtz
Environmental Manager
Kimberly-Clark Everett Facility

May 18, 2005

Mr. Don Nelson
Department of Ecology
P. O. Box 47706
Olympia, WA 98504-7706

Dear Mr. Nelson:

Kimberly-Clark Everett is submitting the following monitoring plan for our bleach plant scrubber.

Overview

This report summarizes the findings of several sets of trials surrounding the Kimberly-Clark Everett bleach plant scrubber, its operation, and its maintenance.

The scrubber exceeded the chlorine dioxide limit of 0.019 lbs/hour during the annual emissions test on March 17, 2005 (chlorine and carbon monoxide were within limits). A review of the operating data from that day showed that the equipment was operating within parameters that were previously identified as consistent with continuous compliance targets. Nonetheless, the chlorine dioxide levels were higher than predicted. Based on these results, the scrubber was shut down and opened up for a physical maintenance inspection on March 29. The most significant finding was a scale deposit on the scrubber exhaust fan's volute. This reduced air flow through the scrubber. This area was cleaned. In addition, the scrubber liquid recirculation system was acid washed to increase recirculation flow rate. These actions significantly improved both the recirculation liquid and air flows. The scrubber was again subject to compliance testing on April 1 and it satisfied all limits.

In order to determine the operating conditions necessary to ensure compliance with the chlorine dioxide limit, a predictive model was developed. The model was based on data generated during a series of trials run April 1, May 4, 5, and 6. Four scrubber operating parameters were modified and a total of 21 runs were executed. Trial data and data from earlier compliance tests completed in March 2005, April 2005, and June 2004 were used to develop the model. There were a total of 34 data sets. Statistical analysis of this data identified the key parameters and produced a mathematical model that can be used to estimate chlorine dioxide emissions. The four significant operating parameters to be monitored for the model are:

- Reducing Agent Chemical Addition Flow rate
- Recirculation Liquid (top shower) Flow rate
- Scrubber Differential Pressure
- Generator Production rate

Recirculation liquid pH was held constant at 10.8 during the trials to ensure that chlorine emissions remained in compliance.

The Everett mill's continuous monitoring system (CMS) keeps track of all the operating parameters tested. The model can be used to continuously predict chlorine dioxide emissions and ensure compliance by changing operating parameters automatically to control for chlorine dioxide.

Appendix C is the updated monthly scrubber report that will be submitted to Ecology. The updated report includes the CMS parameters that will continue to be monitored to ensure compliance with the chlorine dioxide limit of 0.019 lbs/hour.

Based on findings during the physical inspection, the preventative maintenance instructions for the scrubber were updated to reflect routine cleaning of the fan and acid washing the recirculation system. Appendix D is the updated preventative maintenance plan.

Results

Appendix A shows the operating and chlorine dioxide emissions data collected. Appendix B shows the regression tables as calculated by Microsoft Excel. Predicted chlorine dioxide emissions estimates are based on Equation 1 below. As better information becomes available, and more chlorine dioxide emissions tests are completed, this model may be refined. Table 2 shows values for the model constants as well as operating limits the model is accurate within.

EQUATION 1

Emissions = C_1+C_2(Reducing Agent Chemical Flow)+C_3(Recirculation Liquid Flow)+C_4(Scrubber Differential Pressure)+C_5(Generator Production)

Description	Units		Value	Low Limit	High Limit
Intercept	Lb/Hr	C_1	0.0549		
Reducing Agent Flow	Mls/Min	C_2	-0.0000175	300	2300
Recirculation Liquid Flow	GPM	C_3	-0.0000532	64	180
Differential Pressure	in. H2O	C_4	-0.00202	11	19
Generator Production	TPD	C_5	0.00154	0	10

Standard error for this model is 0.008, with an R^2 of 0.54.

The model shows reducing agent flow, recirculation flow, and scrubber pressure differential, are inversely related to emissions. Generator production rate is directly related to emissions. Differential pressure and reducing agent flow are the most significant parameters.

If you have any questions on this monitoring plan, please feel free to call me at 425-259-7525.

Sincerely,

Christine Kurtz
Environmental Manager
Kimberly-Clark Everett

Facility

Appendix A

Date Time Start	Date Time End	Chlorine Dioxide Emissions	Reducing Agent Flow	Recirculation Flow	Differential Pressure	Generator Production
		Lb/Hr	Mls/Min	GPM		T/Day
3/17/05 8:35	3/17/05 9:35	0.026	1172	112	10.84	6.7
3/17/2005 9:47	3/17/2005 10:47	0.032	1179	112	10.71	6.6
3/17/2005 10:59	3/17/2005 11:59	0.033	1170	112	10.96	6.6
4/1/2005 8:00	4/1/2005 8:30	0	1839	174	18.33	8.3
4/1/2005 9:00	4/1/2005 9:30	0	1841	138	11.59	8.3
4/1/2005 10:00	4/1/2005 10:30	0	1488	138	17.64	8.3
4/1/2005 11:00	4/1/2005 11:30	0	1474	175	12.44	8.3
4/1/2005 12:00	4/1/2005 13:00	0	1268	176	18.23	8.3
4/1/2005 13:00	4/1/2005 14:00	0	1375	176	18.59	8.3
4/1/2005 14:00	4/1/2005 15:00	0	1079	176	18.77	8.4
5/4/2005 8:00	5/4/2005 8:30	0	1832	176	13.79	8.1
5/4/2005 9:00	5/4/2005 9:30	0.004	976	176	14.02	8.1
5/4/2005 10:00	5/4/2005 10:30	0.032	543	176	14.12	8.1
5/4/2005 11:00	5/4/2005 11:30	0.017	804	176	16.05	8.1
5/4/2005 12:00	5/4/2005 12:30	0.014	1126	133	13.99	8.1
5/4/2005 13:00	5/4/2005 13:30	0.009	1294	170	12.78	8.1
5/4/2005 14:00	5/4/2005 14:30	0	1149	176	16.09	8.1
5/4/2005 15:00	5/4/2005 15:30	0	1263	108	18.15	8.1
5/4/2005 16:00	5/4/2005 16:30	0.014	242	151	14.04	0.9
5/5/2005 7:37	5/5/2005 8:37	0	1251	170	18.07	8.1
5/5/2005 8:45	5/5/2005 9:45	0	1283	170	18.00	8.1
5/5/2005 10:00	5/5/2005 11:00	0	1302	170	18.01	8.1
5/5/2005 11:38	5/5/2005 12:38	0	1312	110	18.05	8.1
5/5/2005 12:50	5/5/2005 13:50	0	1389	110	18.13	8.1
5/5/2005 14:00	5/5/2005 15:00	0	1389	110	18.00	8.1
5/6/2005 7:30	5/6/2005 8:30	0	1118	173	18.12	5.0
5/6/2005 8:42	5/6/2005 9:42	0	705	173	17.95	5.1
5/6/2005 10:00	5/6/2005 11:00	0	552	173	18.04	5.0
5/6/2005 11:30	5/6/2005 12:30	0.010	1183	120	11.33	8.0
5/6/2005 12:43	5/6/2005 13:43	0.001	1364	118	11.23	7.5
5/6/2005 14:00	5/6/2005 15:00	0.001	1271	111	11.01	7.4

Appendix B

SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.73327
R Square	0.53768
Adjusted R Square	0.46655
Standard Error	0.00788
Observations	31

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	0.0018773	0.0004693	7.559502	0.0003522
Residual	26	0.0016142	6.208E-05		
Total	30	0.0034914			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.0548895	0.01130	4.85567	0.00005	0.03165	0.07813	0.03165	0.07813
CS-422	-0.0000175	0.00001	-3.16715	0.00391	-0.00003	-0.00001	-0.00003	-0.00001
Top Shower Flow	-0.0000532	0.00006	-0.95351	0.34911	-0.00017	0.00006	-0.00017	0.00006
Differential Pressure	-0.0020228	0.00052	-3.86393	0.00067	-0.00310	-0.00095	-0.00310	-0.00095
Generator Production	0.0015361	0.00124	1.23585	0.22757	-0.00102	0.00409	-0.00102	0.00409

Start date 5/1/2005
End date 5/15/2005

Kimberly Clark, Everett Bleach Plant Scrubber Monthly Report for 5/2005

Date	Bleach plant up time (minutes) [1]	Scurbber up time (minutes) [2]	Scrubber pH, daily avg	Scrubber top tray flow (gpm), daily avg	Scrubber reducing agent flow (ml/min), daily avg	Scrubber Differential Pressure (psi), daily avg	ClO2 Generator Production Rate (TPD), daily avg	Model Predicted Scrubber emissions (lb/hr), daily avg [3]
5/1/2005	1440	1440	10.8	121.2	1885.9	17.01	8.2	No Data
5/2/2005	1440	1440	10.8	121.3	1885.2	17.01	8.2	No Data
5/3/2005	1440	1440	10.6	144.8	1794.3	14.64	7.1	No Data
5/4/2005	1440	1440	10.8	169.1	1467.3	13.92	7.8	No Data
5/5/2005	1440	1440	10.8	160.8	1552.5	16.83	8.1	No Data
5/6/2005	1440	1440	10.8	161.5	1260.1	16.75	6.8	No Data
5/7/2005	1440	1440	10.8	166.2	1474.4	18.01	8.1	No Data
5/8/2005	1440	1440	10.8	164.3	1462.8	18.01	8.1	No Data
5/9/2005	1440	1440	10.8	165.2	1504.9	18.00	6.6	No Data
5/10/2005	1440	1440	10.8	166.9	1265.3	18.00	8.0	No Data
5/11/2005	1440	1440	10.8	166.9	1270.6	18.00	8.9	0.0001
5/12/2005	1440	1440	10.8	166.6	1264.6	17.98	8.5	0.0006
5/13/2005	1440	1440	10.8	166.5	1164.6	18.01	9.0	0.0032
5/14/2005	1440	1440	10.8	165.8	1187.2	17.99	9.1	0.0029
5/15/2005	1440	1440	10.8	164.9	1222.0	18.01	9.9	0.0030

[1] The bleach plant is considered operating if the stock pumps for the first chlorine dioxide stage are running. The scrubber is usually left running during short or intermediate duration bleach plant shutdowns.

[2] The bleach plant scrubber is defined as operating when the amp readings on the inlet fan (recorded continuously) are above zero.

[3] Result of a multiple linear regression model that gives an estimated prediction of the chlorine dioxide emissions based on top tray recirculation liquid flow rate, reducing agent flow rate, differential pressure across the scrubber, and chlorine dioxide generator production rate.

Purpose –This PVM procedure is to provide direction to operators and mechanics to maintain the on-going mechanical integrity of the Bleach Plant Scrubber and Stack.

References –This vessel was designed and manufactured by Bionomic Industries of Mahwah, NJ. The Model no. is 36, Series 5700. The serial no. is 99494-01

Safety Precautions - Read MSDS for ClO2 , NaSH, NaOH. V/E SOP P-342

Function – It is used for the collection and disposal of air and gas flow from processes and chemicals, including spills of each chemical or a combination of chemicals used in the manufacture of Chlorine Dioxide solution. It also collects and scrubs the waste air from the pulp bleaching washer hoods. The F/L number for this tank is 1839-P101132-192201-05701.

Description – The vessel's liquid volumn is 1,800 gallons (flooded). The material used in construction is FRP, with a 3/16" PVC dual laminate liner. It is 36" in diameter and 34'-0" high. The Stack is 20" in diameter and is 42'-0" high.
Maintenance –

Yearly – Open hatches and inspect PVC liner, trays, mesh, supports and fasteners.
Clean debris from bottom of scrubber. Clean the lexan windows.
Clean liquid injection nozzles. Remove and clean Liquid Flow Meters.

Every 6 Months – External visual inspection. Inspect walls and nozzles for cracks, leaks and discolored spots.

Quarterly – Clean scale from inside scrubber exhaust fan.
Visually inspect internal trays through hatches.
Inspect recirculation pump rotating elements.

Monthly – Acid clean the liquid injection nozzles (operations) per the procedure
" Bleach Plant Scrubber - Acid Wash"
Re-Calibrate the pH meter
Re-Calibrate the ORP meter

Note: Use the chemical tank inspection sheet, Tank ID # 27, for feedback

APPENDIX A

Kimberly-Clark Corporation, Everett, Washington
Demisters
May, 2005

Date	Absorption Tower Outlet Pressure	Demister Outlet Pressure	Demin Tank No. 1 Air Flow	Demin Tank No. 2 Air Flow	Demin Tank No. 3 Air Flow	Demin Tank No. 4 Air Flow	Demin Tank No. 5 Air Flow	Demin Tank No. 6 Air Flow	No. 10 Boiler Burning Rate
1-May	2.0	20.9	39.7	44.8	54.1	16.1	52.0	57.8	149.8
2-May	2.0	19.2	42.7	40.9	42.8	45.3	39.6	46.4	149.0
3-May	1.7	18.7	41.2	40.1	40.7	42.8	47.2	44.3	152.4
4-May	0.3	19.0	36.3	36.0	40.1	45.4	46.7	41.7	145.1
5-May	1.5	19.7	41.7	38.0	41.8	47.3	48.1	51.4	145.2
6-May	0.9	19.5	37.7	38.9	43.0	44.7	47.0	47.1	147.2
7-May	2.4	19.6	37.1	39.5	40.3	47.9	51.3	49.7	159.2
8-May	2.1	19.3	40.7	38.3	34.7	44.1	47.3	50.3	145.3
9-May	1.3	19.0	42.7	37.5	39.0	43.1	44.5	45.7	139.4
10-May	2.0	19.1	39.8	35.4	45.0	46.2	46.3	45.6	145.6
11-May	1.1	18.5	41.3	34.7	41.0	39.2	49.3	47.4	136.3
12-May	0.7	19.3	38.6	39.3	43.7	40.7	48.4	45.3	147.1
13-May	0.8	19.5	35.7	36.7	45.8	55.9	47.5	43.2	145.4
14-May	0.5	17.4	34.3	34.7	36.2	49.3	43.7	44.4	132.3
15-May	1.7	20.3	32.4	37.1	40.0	50.6	43.9	48.3	150.0

APPENDIX B

Kimberly-Clark Inc. Everett, Washington

Department: **PULP MILL**	Area: **ACID PLANT**
System Name: **SO_2 SCRUBBER AND DEMISTERS**	
Operating Procedure Name: **DEMISTER OPACITY TEST**	
Operating Procedure Number: **APOP435**	

Purpose: The Opacity reading is influenced by both water condensation and particulate. The objective of this procedure is to determine which demister tank is passing excessive particulate causing the high opacity.

Conditions: All testing must be done at a constant burn rate on #10 Boiler. This procedure should be completed by the acidmaker.

Action Step

1. **START** with 6 tanks on line.
2. **TAKE** a tank off line. Record opacity reading.
3. **RETURN** tank offline to service and take off next in line until all six tanks have been tested, recording opacity reading each time.
4. The tank with the highest opacity reading would indicate possible demister candle failure.

APPENDIX C

DATE:

Acid Plant Demister Performance Check

Performed by:

ID Booster Fan (rpm):

Dynawave Froth Zone Flow (gpm):

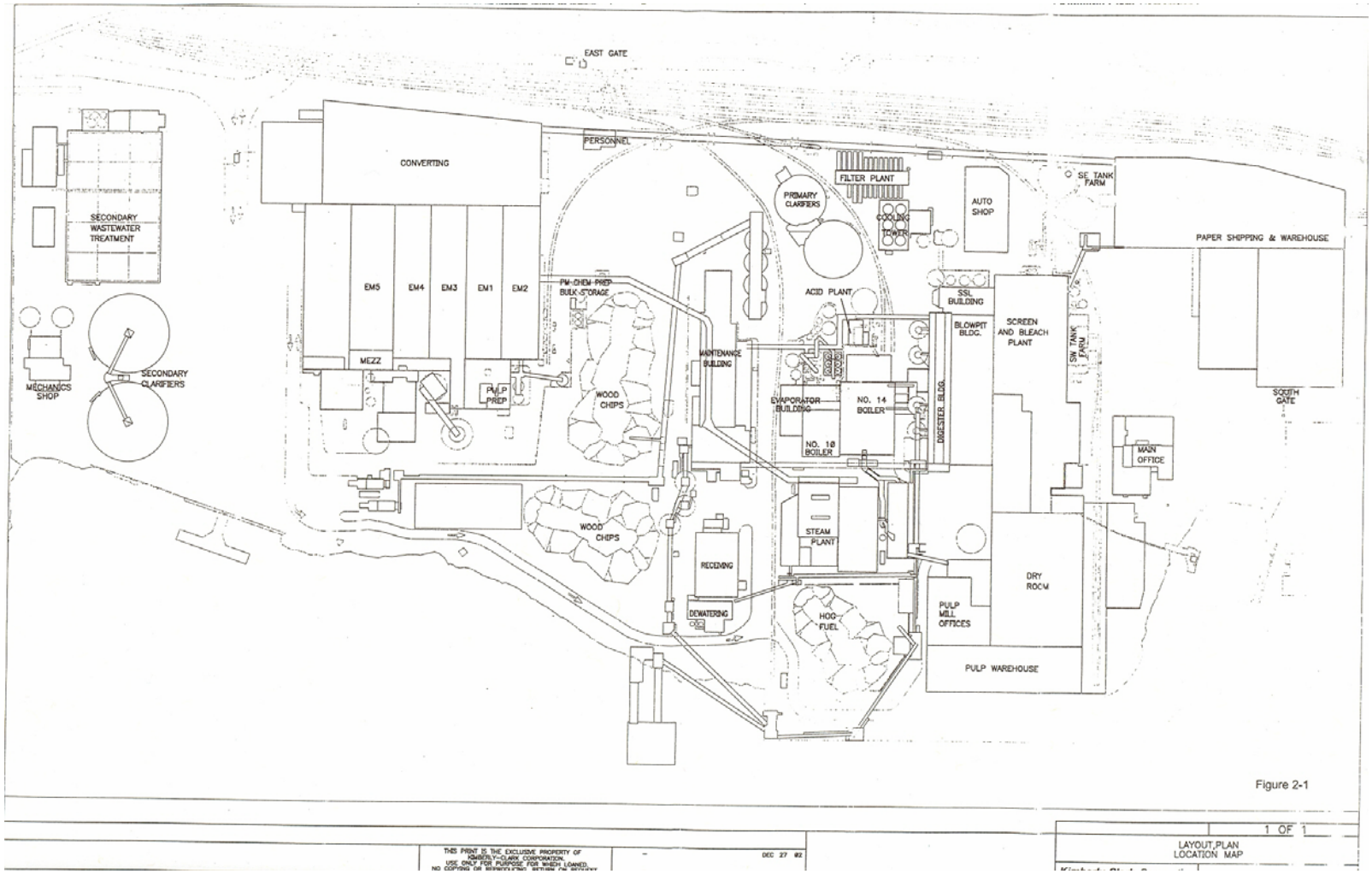
No.10 Boiler Liquor burning rate (gpm):

No.10 Boiler gas burning rate:

Operating Comments:

Demister Count	Abs DP (in H_2O)	Overall DP (in H_2O)	Dyna DP (in H_2O)	ID FAN (%)	ID Booster (%)	Opacity (%)	CO (ppm)	SO2 (ppm)	Air Flow (kscfm)
All Six									
No.1 Out									
No.2 Out									
No.3 Out									
No.4 Out									
No.5 Out									
No.6 Out									

MILL LAYOUTS AND FIGURES



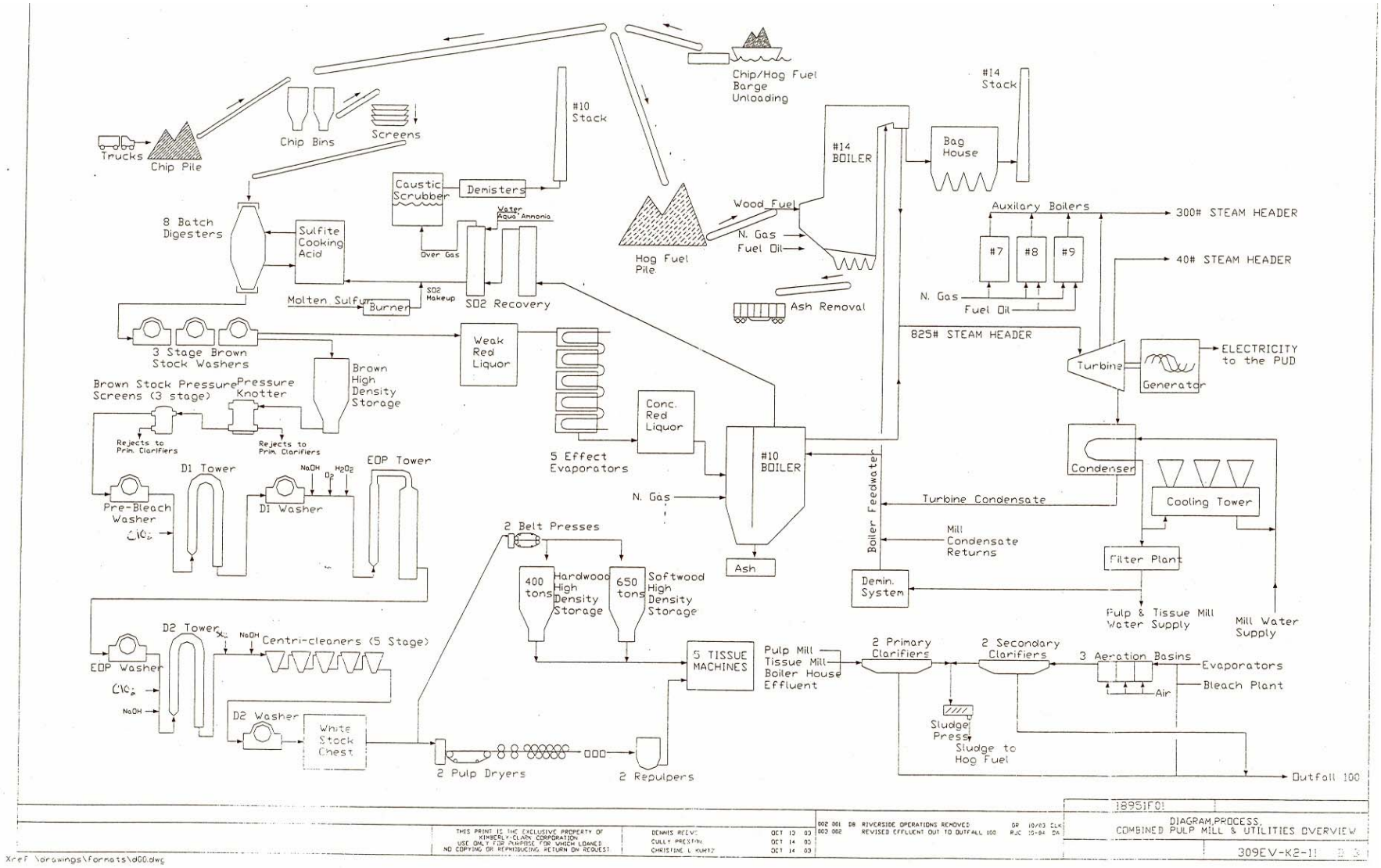

Chip/Hog Fuel Barge Unloading
#14 Stack
#10 Stack
Trucks
Chip Pile
Chip Bins
Screens
Caustic Scrubber
Demisters
#14 BOILER
Bag House
Wood Fuel
N. Gas
Fuel Oil
Auxilary Boilers
300# STEAM HEADER
40# STEAM HEADER
#7
#8
#9
8 Batch Digesters
Sulfite Cooking Acid
Water
Aqua Ammonia
Over Gas
SO2 Makeup
SO2 Recovery
Hog Fuel Pile
Ash Removal
Molten Sulfur
Burner
3 Stage Brown Stock Washers
Weak Red Liquor
825# STEAM HEADER
Turbine
Generator
ELECTRICITY to the PUD
Brown Stock Pressure Screens (3 stage)
Pressure Knotter
Brown High Density Storage
Rejects to Prim. Clarifiers
Rejects to Prim. Clarifiers
5 Effect Evaporators
Conc. Red Liquor
#10 BOILER
Condenser
Cooling Tower
D1 Tower
NaOH
O2
H2O2
EOP Tower
Pre-Bleach Washer
ClO2
D1 Washer
N. Gas
Turbine Condensate
Boiler Feedwater
2 Belt Presses
Mill Condensate Returns
Filter Plant
400 tons
Hardwood High Density Storage
650 tons
Softwood High Density Storage
Ash
Demin. System
Pulp & Tissue Mill Water Supply
Mill Water Supply
D2 Tower
NaOH
Centri-cleaners (5 Stage)
EOP Washer
ClO2
NaOH
D2 Washer
White Stock Chest
5 TISSUE MACHINES
Pulp Mill Tissue Mill Boiler House Effluent
2 Primary Clarifiers
2 Secondary Clarifiers
3 Aeration Basins
Evaporators
Bleach Plant
Air
Sludge Press
Sludge to Hog Fuel
2 Pulp Dryers
2 Repulpers
Outfall 100
18951F01
DIAGRAM,PROCESS, COMBINED PULP MILL & UTILITIES OVERVIEW
309EV-K2-11
THIS PRINT IS THE EXCLUSIVE PROPERTY OF KIMBERLY-CLARK CORPORATION USE ONLY FOR PURPOSE FOR WHICH LOANED NO COPYING OR REPRODUCING RETURN ON REQUEST
DENNIS REEVE OCT 13 03
CULLY PRESTON OCT 14 03
CHRISTINE L KUNTZ OCT 14 03
002 001 DB RIVERSIDE OPERATIONS REMOVED
003 002 REVISED EFFLUENT OUT TO OUTFALL 100
DR 10/03 CLK
RJC 10-04 DA
Xref \drawings\formats\d00.dwg

Figure 2.2

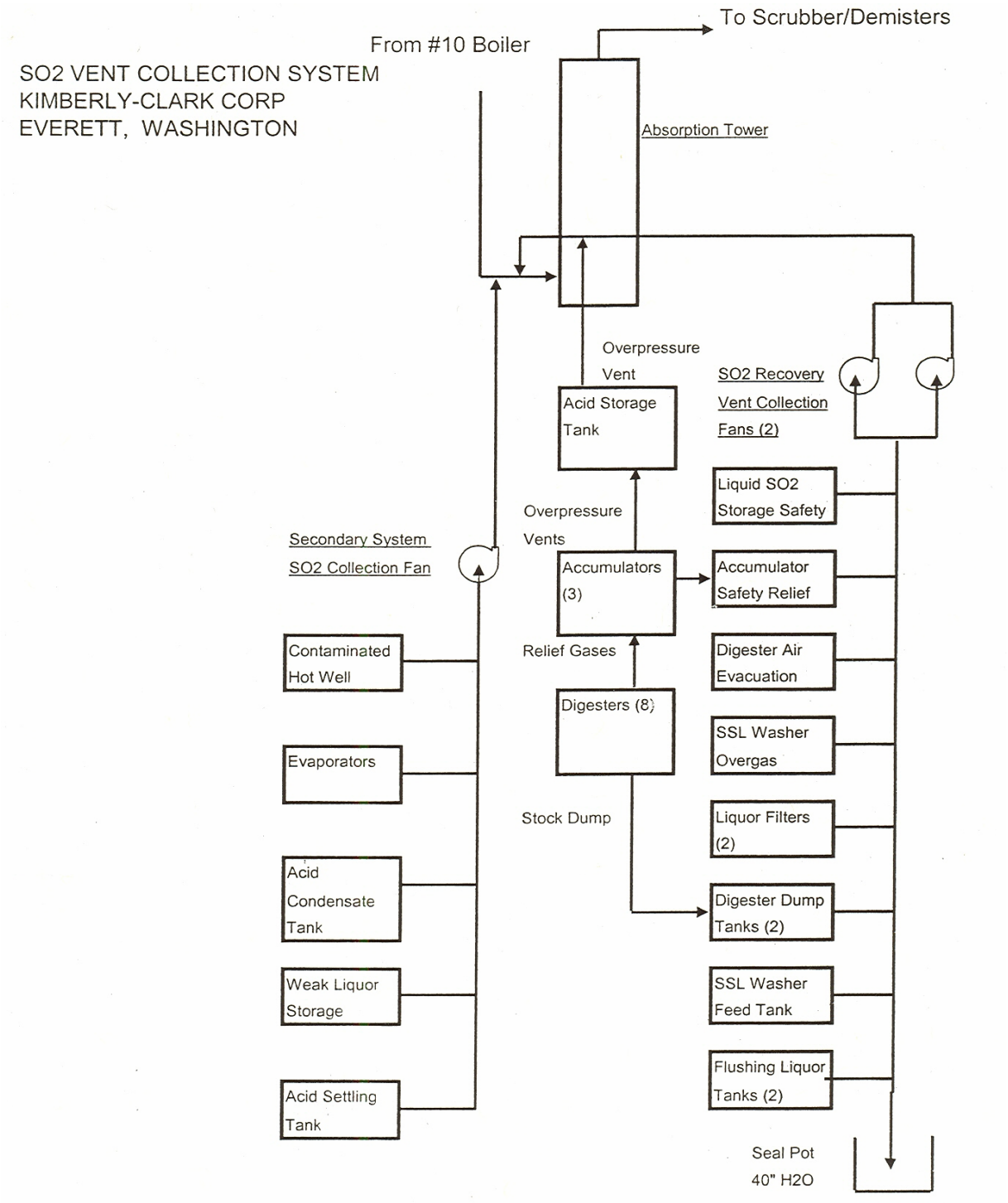
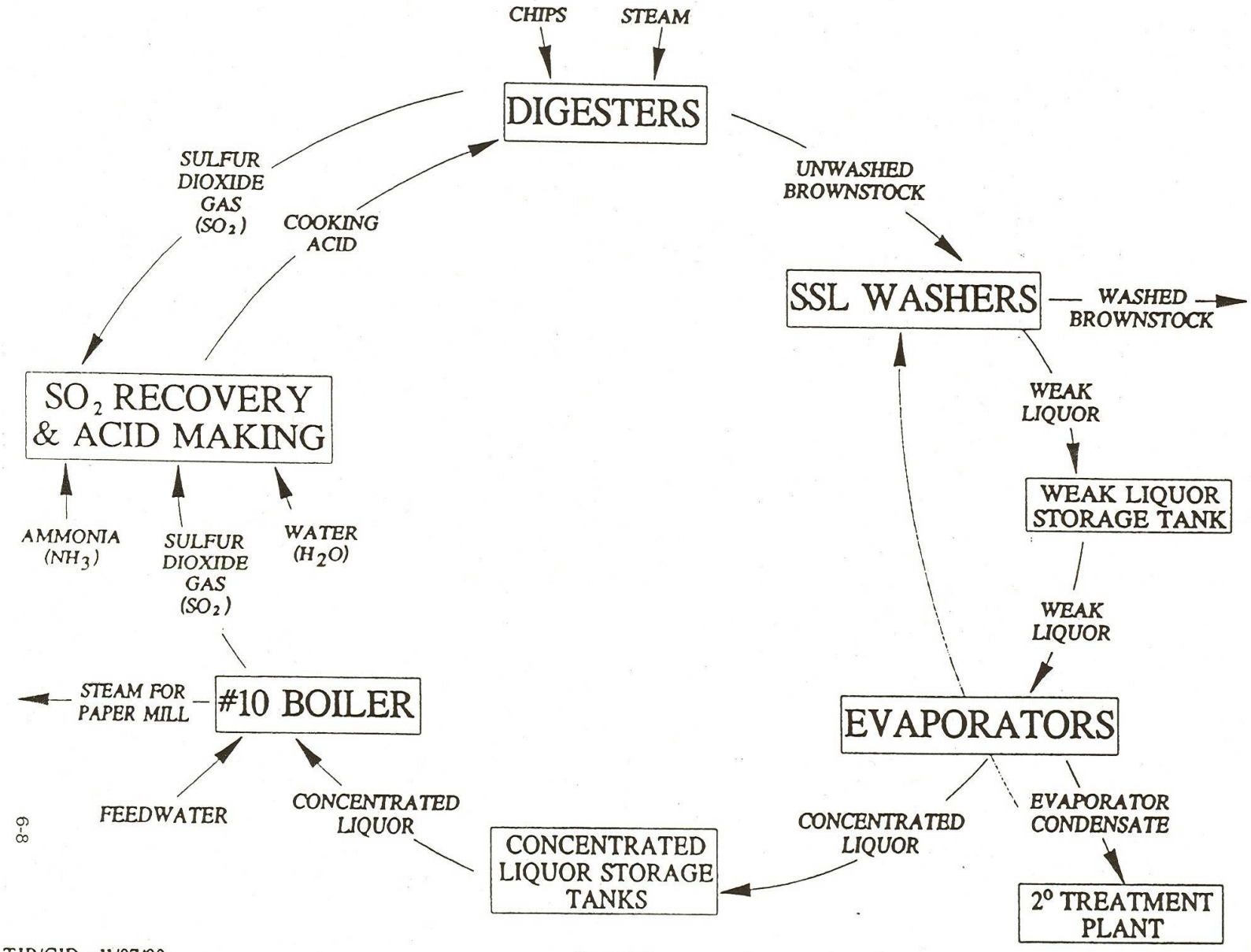

SO2 VENT COLLECTION SYSTEM
KIMBERLY-CLARK CORP
EVERETT, WASHINGTON
From #10 Boiler
To Scrubber/Demisters
Absorption Tower
Overpressure
Vent
Acid Storage
Tank
SO2 Recovery
Vent Collection
Fans (2)
Liquid SO2
Storage Safety
Overpressure
Vents
Secondary System
SO2 Collection Fan
Accumulators
(3)
Accumulator
Safety Relief
Contaminated
Hot Well
Relief Gases
Digester Air
Evacuation
Digesters (8)
SSL Washer
Overgas
Evaporators
Stock Dump
Liquor Filters
(2)
Acid
Condensate
Tank
Digester Dump
Tanks (2)
Weak Liquor
Storage
SSL Washer
Feed Tank
Flushing Liquor
Tanks (2)
Acid Settling
Tank
Seal Pot
40" H2O

Figure 6.1

LIQUOR LOOP PROCESS FLOW CHART



6-8

TJB/CJD - 11/07/90

Figure 6-2

RESPONSIVE SUMMARY

There were no comments received during the public comment period.

The attached Public Notice was sent, via postal and electronic mail, to a list of interested people, on May 20th. The Notice was published in the May 25th edition of the Everett Herald.

DEPARTMENT OF ECOLOGY

Notice of Proposed Air Operating Permit

Regulated Facility: **Kimberly-Clark Worldwide, Inc.**
2600 Federal Avenue
Everett, Washington 98201

Permit number: WA 000062-1

Permit Renewal Proposed:

The Department of Ecology proposes to renew this pulp and paper producer's federal Air Operating Permit (AOP). An AOP prescribes performance standards for the mill's operation and for the facility's equipment. This proposed AOP includes all existing AOP requirements, and adds:

- Specific Maximum Achievable Control Technology (MACT) requirements, as developed by the federal Environmental Protection Agency to limit emissions of hazardous gases and particulates.
- MACT I requirements to control hazardous air pollutants emissions from the pulping and bleaching processes;
- MACT II requirements to control metal emissions from the recovery furnace; and
- The boiler MACT requirements to control metals and other hazardous pollutants emissions from the co-generating boiler.

Comments Welcome:

You may comment about the proposed AOP: its emission limits, monitoring methods, and reporting frequency. Please send your specific concerns, and ideas to improve Kimberly-Clark's proposed AOP for the Everett facility. We must receive them by **5:00 pm** on Monday, **June 20, 2005**.

Find the Documents:

You may view or download the proposed Air Operating Permit and Support Document, from our web site: http://apps.ecy.wa.gov/industrial/proposed.asp

To read a printed copy of the proposed AOP and Support Document, visit the reference desk of the Everett Main Public Library, at 2702 Hoyt Avenue. Or you may schedule a time and date to read the documents at Ecology's Industrial Section office, located in Lacey at 300 Desmond Drive; phone Kathy Vermillion at (360) 407-6916. If you need a copy of the documents in an alternate format, phone Dolores Mitchell at (360) 407-6057 or e-mail dmit461@ecy.wa.gov

Send Comments To: Donald V. Nelson, P.E.,
Department of Ecology
Industrial Section
P.O. Box 47706
Olympia, WA 98504-7600